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The Annual Conference at Pittsburgh

The 1952 Conference of the National Society for the Prevention of Blindness was held at Mellon Institute, March 19-21. A brief report of the three-day meeting and several of the papers are presented here. Other papers will appear later.

MORE auspicious conditions for holding a meeting can scarcely be imagined than those at Mellon Institute, Pittsburgh, the scene of the National Society's Annual Conference, March 19–21. All who attended the sessions held in this large and extraordinarily beautiful building felt they were enjoying a rare privilege.

This gracious hospitality was extended by Dr. C. Richard Walmer, managing director of the Industrial Hygiene Foundation of America, Inc., which has its headquarters at the Institute. The Foundation is a nonprofit research association of industries for advancing industrial health, improving working conditions and bettering human relations. Its staff includes physicians, chemists, engineers, biochemists and medical technicians—all specialists in health problems arising in industry. Through affiliation with the Foundation, companies are entitled to the services of these specialists and the Institute's technical facilities.

The success of the conference sessions and the social highlights of the program were due largely to many months of advance planning by the local arrangements committee. Serving with Dr. Jay G. Linn, its chairman, were Dr. Robert J. Billings, Dr. Murray F. McCaslin, Dr. Edmund R. McCluskey, Dr. John S. Plumer and Mrs. Marcella C. Goldberg. The staff of the Pittsburgh branch, Pennsylvania Association for the Blind, also had a major share in the conference arrangements, in particular Mrs. Goldberg, director, welfare services, and Miss Margaret F. Gnade, supervisor, prevention of blindness department. The outstanding program carried on by this organization, of which W. Harold Bleakley is general manager, is well known to everyone working in this field.

Children's Eye Problems

At the opening session in the Institute's auditorium on Wednesday morning, March 19, the delegates were welcomed by Dr. William S. McEllroy, dean of the University of Pittsburgh School of Medicine, and Kenneth F. May, vice chairman of the board, Pittsburgh Branch, Pennsylvania Association for the Blind. Adding his greetings, Dr. Franklin M. Foote, executive director of the National Society for the Prevention of Blindness, said he believed it fitting that the

first conference session was to be concerned with the care of children's eyes. "Here we are dealing with the future," he said. "In this country today there are an estimated 6,500,000 school children who need eye care—that means roughly one out of every four.

"Studies recently made by the National Society show that in most instances the child with eye trouble will not complain. His vision may be blurred, he may not be able to see well, yet he will seldom tell anyone about it because he doesn't know just how clearly he ought to see. So it is up to us—parents, teachers and others who deal with children—to know the symptoms of eye trouble and to be on the alert for them.

"One point at which adult supervision is especially needed is on the playground. Altogether an estimated 85,000 eye accidents occur each year among American children of school age; and we have found that well over half of these mishaps occur during unsupervised play.

"These facts emphasize that conservation of vision—and especially the protection of our children's eyes for tomorrow—is a matter that concerns each and every one of us."

Presiding at the session was Dr. Edmund R. McCluskey, professor of pediatrics, University of Pittsburgh School of Medicine. Dr. Frank D. Costenbader, attending surgeon at Children's Hospital, Washington, D. C., discussed detection and correction of visual defects among children, warning that "later may be too late." He emphasized that such defects must be treated as early in life as possible, and that eye testing is no substitute for a thorough examination.

"In most communities eye screening has become a recognized part in determining each child's fitness to enter school and continue his schooling," Dr. Costenbader said, "but a distinction should be made between school screening and complete eye examination. . . . Many parents are at times unimpressed by the reporting of poor vision, and so do nothing. Much unhappiness can be avoided if parents and teachers realize that the results of screening merely suggest, but do not prove, that eyes are normal or abnormal. . . . Some children found to be defective on screening are found normal on careful examination, while others thought to be normal after screening are found to be defective.

Common Defects

"The most common defects," Dr. Costenbader said, "are the refractive errors — farsightedness, nearsightedness and astigmatism—which either cause poor vision because the eye can't compensate properly for them, or discomfort because the eye strains unduly as it compensates. Glasses should be worn only for the times that symptoms interfere with proper performance.

"Less frequently encountered is visual loss from disuse. This should be treated by forced use and correction of any underlying defect. Less common but more serious is visual loss from damage of the ocular structure or nerves, and unfortunately these are difficult to treat, and often end in permanent visual damage. Emphasis must be given to early recognition of visual defects, and their correction as early in life as possible."

Dr. Murray F. McCaslin of Pittsburgh continued the discussion of chil-

dren's eye problems and Dr. George T. Stine, assistant professor, Ohio State University Medical School, next dealt with the subject, "Correction of Ocular Muscle Imbalance."

Orthoptic Training

The importance of orthoptic training in preventing loss of sight due to crossed eyes was stressed by Miss F. Elizabeth Jackson, orthoptic technician, St. Vincent's Hospital, Erie, Pa.

"The problems presented by the cross-eyed child are many and complex," Miss Jackson said. "The orthoptist's unique contribution in the diagnosis is the analysis of the functioning of the two eyes. There are four functions to be studied: fixation, fusional ability, ability to control or modify the angle of deviation, and accommodation habits."

As a therapeutic method, she explained, orthoptics must be selective to be successful. All cases are not suitable for training.

"I believe it can be said," concluded Miss Jackson, "that orthoptics has increased the ophthalmologist's interest in the treatment of squint, and has set higher standards of cure. . . . We can now aim at normal binocular function in many cases and are not limited to cosmetic improvement only. Improved results, however, entail a more prolonged period of treatment, require greater patient cooperation, and demand a closer working relationship between patient, parent, ophthalmologist and technician. Maintenance of interest, cooperation and an efficient working relationship, by the technician, is no less a contribution towards the desired end than technical skill, since the patient cannot be cured by 'exposure' to treatment alone."

R. P. Bell of the Pittsburgh Plate Glass Company discussed the use of color in the school as an aid in reducing eye fatigue and creating better seeing conditions.

"Classrooms used for art, science and sewing," Mr. Bell said, "should be in neutral colors—that is, those of the gray family with light reflecting factors of 60 to 65 per cent. The reason for gray is to eliminate color distractions in the work being done by reflected color from walls or ceilings. The artist selects color against a neutral background; matching thread color to the fabric color also requires a neutral background. Certain experiments made in science classes require keen color vision, therefore in such instances a neutral background will sharpen the contrast and make color change easily detected.

"Normal classrooms used for general recitation and lectures should be colored according to orientation. Cool colors for warm exposures, warm colors for cool; a combination of warm and cool for exposures in between. The front wall should be the focal wall, and the color should be lower in brightness than the other walls, for eye rest and attention value. The ceiling color should be white or off-white for good light reflection; the side and rear walls higher in brightness. Colors reflecting 50 to 70 per cent of the light striking them are recommended by authorities.

"In classrooms where a visual task or concentration is required sharp contrasts should be avoided."

Administration Problems

The function of school administrators in eye health programs was discussed by Dr. Earl A. Dimmick, Pittsburgh superintendent of schools.

"It is now a generally accepted fact," Dr. Dimmick said, "that the detection of physical and mental defects in school children is an important function of public school administration. It is necessary to notify parents about the physical defects in children, to advise them and guide them to the right places for proper treatment. School administrators must have a definite policy and plan for such activities and should accept responsibility for coordination so that the entire system will be efficient and effective. . . .

"The design of school buildings in the future will be influenced greatly by research findings on the effect of such things as direction and intensity of light, both natural and artificial, unilateral and multilateral lighting, direct and indirect lighting, and a combination of these features. The paint on the walls, the furniture in the rooms, the chalk boards, the paper in textbooks, and many other material things will be chosen in the future not only because of their utility values, but primarily because of the way in which these material aids or things absorb or reflect light and their total effect on the eye health of the child."

Medical Investigations

The second conference session under the chairmanship of Dr. Harvey E. Thorpe, chief, department of ophthalmology, Montefiore Hospital, Pittsburgh, was devoted to scientific problems—medical investigations that are aiding in the fight against the blinding eye diseases. The papers of Dr. James A. Olson and Dr. William L. Benedict appear in this issue.

Retrolental fibroplasia, a baffling new eye disease unheard of ten years ago, is now taking the eyesight of an estimated 650 American infants every year, said Dr. Edward R. Schlesinger, director, Bureau of Maternal and Child Health, New York State Department of Health. He reported on a recently completed study of data obtained from questionnaires sent to parents of all premature infants born in New York State (exclusive of New York City) during 1948 and 1949. The survey covered only those infants weighing less than 4½ pounds at birth. All returned questionnaires which indicated retrolental fibroplasia were carefully checked.

Dr. Schlesinger said that there was a "striking relationship" between the occurrence of retrolental fibroplasia and the duration of pregnancy. In the total group of infants studied, he said, 6.3 per cent of those born more than two months prematurely had the disease, while less than one per cent developed retrolental fibroplasia in the "seven month and above" group. The survey showed that the disease affected 1.5 per cent of the total number of infants listed, and was far more prevalent among infants weighing less than 2¼ pounds at birth, reaching 15 per cent in this group.

Dr. Lorand V. Johnson, associate clinical professor of ophthalmology at Western Reserve University, stated that "achievement in ophthalmic research bears a direct relationship to the ability of the personnel," and added that "few laboratories are provided by medical schools which assure adequate space or permanent facilities." Pointing out that the discovery of the ophthalmoscope in 1851 was followed by a golden era of clinical work Dr. Johnson emphasized that clinical research and basic laboratory

research supplement each other, much like pieces that fit together for the eventual solution of a jig-saw puzzle, and that both play vital roles in work against eye disease. He added that because of the progress of laboratory investigation, the clinical specialist is able to work with more and more improved sight-saving techniques.

Stating that increased support for eye research programs must be provided if the campaign against blindness is to be effective, Dr. Johnson added that "despite a high record of achievement, in few fields are research workers so thwarted as frequently to cause the abandonment of their ideals."

Two other papers presented at this session will be published in later issues: "Hereditary Eye Problems" by Dr. Jay G. Linn, professor of ophthalmology, University of Pittsburgh School of Medicine, and "Management of Congenital Glaucoma" by Dr. Harold G. Scheie, associate professor of ophthalmology, University of Pennsylvania School of Medicine.

Industrial Eye Programs

The problems of sight conservation in industry were the subject of discussion at the Thursday morning session under the chairmanship of T. O. Armstrong, director, plant labor relations services, Westinghouse Electric Corporation, Pittsburgh. The paper of Dr. Daniel C. Braun, medical director, Industrial Hygiene Foundation, on the function of the plant medical department in the vision program, appears in this issue. Those of the other speakers will be reported on later.

Vision Testing in Schools

Apparently perfect 20/20 eyesight is no guarantee against eye disease, Dr. Ralph C. Lanciano said during the discussion of vision testing problems in schools at the Thursday afternoon session. Dr. Lanciano, head of the department of ophthalmology, Philadelphia Board of Public Education, declared that as a means of testing visual acuity the Snellen chart, properly used and interpreted, is without doubt the most practical, most efficient and most economical method at our disposal at the present time.

However, Dr. Lanciano added that too frequently school health departments carelessly take for granted that the eyes of a child are free from disease or abnormality when the visual acuity is found to be normal. Actually in many cases children have passed the vision test while actually suffering from eye diseases.

One of the most important factors in the success of a school vision testing program is community-wide planning that includes all groups of interested citizens, said Miss Caroline Austin, vision consultant, Michigan Department of Health. Reporting on the department's eye health program inaugurated four years ago, Miss Austin emphasized that long-term success depends largely on support from community leaders.

"Even when we work through a well organized and long established health department," she said, "we feel that a plan set up by representatives of the community—including health department personnel, school board members, administrators, teachers, doctors, PTA members and local service groups—is well worth the time it takes." These community leaders can help survey the eye services already available, determine what more is

needed, and make plans to meet these needs, including financing. The groundwork is also laid for a program of community education on eye health.

Declaring that case finding is part of an over-all education program, Miss Austin explained that her department "gives the teachers suggestions and materials for carrying out such education projects, along with trying to interest them in vision problems of all children to make them feel the need for such activities." She pointed out that when the Michigan program first began, vision testing was done by former teachers and nurses, trained on the job by the state vision consultant.

"We soon found out that we could not meet the demand and also fill the requests for other services which were pouring in. We experimented by setting up special training sessions at two teachers colleges . . . with special emphasis on the Massachusetts Vision Test, as that was the most popular."

The experimental sessions proved so successful, Miss Austin reported, that the Michigan Department of Health has continued having two or three sessions each summer, and the first winter session was held during January of this year. As a result, there are over 300 technicians in Michigan who are trained to do vision testing.

Challenge for Nurses

Three round-table discussions were held simultaneously on the second afternoon of the conference. Dr. Dorothy Rood, chairman, Department of Public Health Nursing, University of Pittsburgh, served as chairman of one discussion on "Eye Health—a Challenge for Nurses." Miss Stella L. Brueggen, R.N., of the Illinois Society for the Prevention of Blindness, outlined the present vision program of the Chicago public schools. Mrs. Sophronia Brownfield and Miss Margaret Balog, staff nurses from the Pittsburgh Division of Public Health Nursing, presented problems with which the nurses are frequently confronted in their referral of children following school vision screening tests.

Miss Helen E. Weaver, R.N., NSPB consultant in nursing activities, also contributed to the discussion and a summary of this afternoon session was presented by Miss Martha C. Zavonia, R.N., Eye and Ear Hospital, Pittsburgh. The following points were emphasized:

1. Considerable educational work with parents and children is imperative if children are voluntarily to wear their glasses as directed and if parents are to accept the need for children to wear glasses.
2. Stress must be placed on improving screening techniques, and more concentrated follow-up must be carried on with children who present problems of eyestrain.
3. Local agencies are available to provide glasses for children who are unable to obtain them otherwise.

It was also felt that considerably more information is needed on testing devices available for screening programs, what results might be expected from them, and further interpretation of the various eye problems of the school-age child.

Social Work Problems

The discussion of "Eye Health—Responsibility of the Social Worker" was led by Mrs. Mary C. Burnett, head, Department of Social Work, Carnegie Institute of Technology.

Miss Miriam Norris, Social Service Department, University of Chicago Clinics, stressed the importance of accepting the individual with eye disease or disability as someone who must first be understood as a functioning person. This approach, Miss Norris pointed out, recognizes the meaning which illness and physical defect may have for the individual. Social workers should explore ways to work with all members of the professional team providing services in the interest of prevention, medical care and social services. This means going beyond the specialized medical setting into the community. Miss Norris heavily underscored the point that success in finding and using resources largely depends on knowing an individual well enough to understand what it is he really needs and can use constructively. Often it is necessary for social workers to take the added step of encouraging and stimulating schools, social agencies, recreation centers and other agencies to try new and creative ideas in the interest of meeting individual needs.

Miss Norris spoke of the great need for more basic social research in personality development. While physical handicaps in children may well complicate healthy personality development, the essential dynamic potentials for such development are not actually changed by the handicap. She added a plea for social workers everywhere to adopt a research point of view. It is from such critical analysis of our materials that we will gain greater knowledge, and find improved ways of using that knowledge in the interest of prevention and in providing maximum social services to insure good eye health for everyone in the community.

Education of Partially Seeing

Miss Marjorie A. C. Young, NSPB consultant in education, was chairman of a panel on "Education of Partially Seeing Children in the Regular Classroom." A brief picture of educational facilities for such children in Allegheny County was given by Dr. Arthur G. Henry, supervisor of special education in the Allegheny County schools. Miss Ruth E. Caldwell, H. C. Frick School, Pittsburgh, continued with a description of the kinds of activities her children undertake in the regular classroom.

Since Tennessee is essentially a rural state, the majority of its partially seeing children remain in their regular schools and classes and special services are provided by regional supervisors. Mrs. Amie L. Dennison, Howard High School, Nashville, described this program and discussed in detail information regarding common eye defects that regular classroom teachers should know in order to help partially seeing children to make the best adjustment possible.

The needs of these children center around the opportunity for normal development in a natural environment. Mrs. Della A. Loviner, supervisor, Department of Special Education, State Department of Education, Columbus, presented a report on what is being done at present in that Ohio city to provide this opportunity.

Team Work Needed

As chairman of the conference dinner, Mason H. Bigelow, National Society president, emphasized that in spite of everything the science of eye care has been able to do, in spite of the miracles of surgery and the gains in

methods of treating eye problems, the campaign to save sight has only begun. "It is fitting to remember," he said, "that prevention of blindness is a task calling for the closest kind of cooperation between members of a widely scattered and highly diverse team. The schoolteacher and the parent; the nurse and the public health worker; the ophthalmologist, the research scientist and the optometrist; the business executive and the worker at his job—all must work as a team if we are to achieve success.

"We come from all sections of the United States, and during these three days we are hearing reports on the latest scientific findings, and on new experiences in all phases of sight conservation work. As I have listened to talks and visited with old friends I have been reminded again that the most important single fellow on our sight saving team is that fellow known as the man-in-the-street. Only with his cooperation and support—only with the fullest participation by the public can we hope to see the day when most preventable blindness will actually be prevented.

Public Support

"There must be broad public support for a greatly intensified campaign of research on the blinding eye diseases. We need the widest possible public participation in our preventive programs in the cities and counties across America. And finally each of us, individually, must cooperate by safeguarding our own sight, by knowing the importance of regular eye examinations, by observing the principles of good eye care."

Dr. Pearce Bailey, director, National Institute of Neurological Diseases and Blindness, U. S. Public Health Service, was the principal speaker at the dinner. His address appears in this issue.

Eye Problems of Middle Age

On the third morning of the conference the eye problems of middle age were discussed in a session under the chairmanship of Dr. Angus L. MacLean, president, Maryland Society for the Prevention of Blindness. "Diabetic Eye Conditions," the paper of Dr. Howard F. Root, associate in medicine, Harvard Medical School, is included in this issue.

"Glaucoma — Diagnostic Procedures" was the subject of an address by Dr. Willis S. Knighton of New York who is chairman of the National Society's Committee on Glaucoma.

"The importance of recognizing glaucoma in its early stages," said Dr. Knighton, "has led to the use of so-called provocative tests, designed to test the ability of the eye to maintain normal intraocular pressure under difficult conditions. Since none of these tests is 100 per cent accurate there are many times when the presence of glaucoma cannot be affirmed or denied with assurance.

"Some of the more recent methods of examination which are less artificial or provocative in their application include studies of the angle of the anterior chamber, of the aqueous veins and of the rate of aqueous flow. The most accurate appraisal of early glaucoma depends upon a combination of routine examination, repeated observations and special tests."

A paper on "The Patient's Reaction" given at this session by Miss Margaret F. Gnade will appear in the next issue of the REVIEW.

Conference Highlights

An impressive summation of the conference proceedings was given at the luncheon on the final day by Dr. Thomas Parran, dean, Graduate School of Public Health, University of Pittsburgh.

"Of great significance," he added, "were the subjects that were *not* on your program — trachoma, leprosy, ophthalmia neonatorum, xerophthalmia. All these are important causes of blindness in some areas of the world, but you have been part of the team that has virtually eliminated them in this country. Yet in times of stress and deprivation some of these causes of blindness may again make their appearance. . . .

"I recall seeing numbers of blind children in the state school in Denmark after World War I, children blind from corneal scars of xerophthalmia, caused by lack of vitamin A. During that war the Danes had sold nearly all their butter to the British, tempted by the high prices they could get. Along with their butter, they sold their children's sight.

"This tragedy impressed me with another kind of blindness from which the human race suffers—blind intolerance, greed, avarice, nationalism. At its worst, it leads man's aggressive instincts to make war upon his fellows.

"Strong forces must be created to counteract this form of blindness. Are you willing to expand your original goals to include the urgent task of greater vision and greater understanding among all peoples in the cause of peace? Without this higher vision, we are lost."

Experts Condemn "Night-Driving Lens"

A REPORT on the value of tinted glasses under various conditions of use appears in the Transactions of the American Academy of Ophthalmology and Otolaryngology for March-April 1952. Prepared by a Sub-committee of the Joint Committee on Industrial Ophthalmology of AAOO and AMA, this report on "Tinted Optical Media" clarifies the basic principles involved. Members of the Sub-committee, all authorities on the subject, are John L. Matthews, M.D., *chairman;* Lt. Comdr. Dean Farnsworth, USN; Everett V. Kinsey, Ph.D.; and Col. Victor A. Byrnes (MC) USAF.

Tinted glasses fall into three categories: sunglasses; tinted glasses for constant wear; and colored glasses for industrial, military or other specialized purposes. Only the first two are discussed in the report. Of particular interest to the public, probably confused by many contradictory reports and advertising claims, are the following general comments on sunglasses, so-called "night-driving" lenses and mildly tinted lenses:

"In considering the use of glasses to reduce overhead brightness either indoors or out, it is to be remembered that a visor or broad-brimmed hat is a most effective shield and will frequently obviate the necessity for sunglasses.

"This Sub-Committee condemns the use of any type of 'night-driving lens.' Any such lens, whether colored, reflecting or polarizing, reduces the total light transmitted to the eye and

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ACTH and Cortisone in Treating Eye Conditions

JAMES A. OLSON, M.D.

Associate Surgeon, Division of Ophthalmology
Henry Ford Hospital, Detroit, Michigan

These hormones have assumed a ranking place in ocular therapeutics although many of the most common and serious eye afflictions fail to respond to them. Intensive investigation is going forward in an effort to bring about better knowledge and understanding of their value and use.*

DURING the past two-and-a-half years ophthalmologists and those working in close association with that field have watched with interest a widespread clinical trial of ACTH and cortisone. The accumulated results of many investigators have shown without question that both of these agents are of great value in the treatment of a variety of ocular lesions. These hormonal drugs have been the most significant contribution to medical therapy since the introduction of the antibiotics. From the standpoint of the ophthalmologist they are as important as the antibiotics and chemotherapeutic agents, if not more important.

Yet, despite the high esteem these drugs are attaining, they are not curative in any true sense, or in the same sense that penicillin cures pneumonia and other bacterial infections. Secondly, these hormonal agents are still inadequate in the treatment of some of our most devastating and blinding diseases. It is certainly within the realm of probability, however, that as the multiple interrelationships of the many hormones of the various endocrine glands are more completely understood continuing advances may be made into the therapy of some of the more critical eye lesions.

No attempt will be made to review the history or development of ACTH and cortisone, in itself a fascinating story. It seems more desirable to present a brief discussion on how these agents function so that some of the mystery which seems to surround them may be dispersed and thus provide a better understanding of the varying responses of the different eye conditions to the drug.

Action of these Hormones

ACTH is a product of the pituitary gland; cortisone (Compound E) and

* A paper presented at the Annual Conference of the National Society for the Prevention of Blindness held in Pittsburgh, Pa., March, 1952.

its more recently discovered brother hormone hydrocortisone (Compound F) are products of the cortex of the adrenal gland. These substances are constantly present in the blood and in the fixed tissues of the body. The release of ACTH from the pituitary gland has no direct effect on diseased or inflamed tissue. As of present understanding its action is to stimulate the adrenal cortex and increase the volume output of the multiple hormones in that portion of the adrenal gland, among which are cortisone and hydrocortisone. It is through their action directly at the local tissue level, on the diseased tissue, that the inflammatory process is brought under control.

One may justifiably ask: "If ACTH is the activator of cortisone and other hormones in the adrenal cortex, what activates the pituitary to produce the ACTH?" Under circumstances of normal physical and mental health it is thought that all of the endocrine glands are in reasonable balance with one another, providing a constant, basic, or minimal flow of hormones to one another and to body tissues as required to meet the various physical, nervous or emotional adjustments of the moment. However, when the human organism is subjected to certain forms of stress as might be brought about, for example, by trauma, bacterial infection, fever, an allergic response to some allergen, emotional or psychological stimulation such as fright or even grief, there is then an alteration in the endocrine system as in other systems of the body to meet the emergency and attempt to bring the organism back to normal. As a result of this stress there is a greater outpouring of ACTH and thus a greater stimulus to the adrenal cortex with the resultant release of increased amounts of cortisone and the other hormones.

One may then ask: "If this is true, if the endocrine system responds to these insults in such a protective fashion, how does it happen that so many people are subject to certain eye diseases that may be so devastating?" The answer is thought to revolve about one of two or three probabilities; first an overwhelming insult from the allergens or the trauma, or the psychic stress which is over and beyond the capacity of the normal ACTH-cortisone axis to handle; or secondly, a deficiency or imbalance within the endocrine system that will not permit adequate response even to lesser insults which under normal circumstances they could control; and of course, there is the third probability which is simply a combination of the first two factors—an overwhelming insult combined with a deficient endocrine response.

Supplemental Treatment

When the insult to the eye has resulted in an iritis, iridocyclitis, some form of keratitis, chorioretinitis, optic neuritis or any of the multiple other inflammatory lesions to which the eye is subject, the use of ACTH or cortisone is indicated as supplemental treatment. ACTH is given hypodermically either in muscle or subcutaneous tissue; it can be given intravenously, or by nasal inhalation to supplement the patient's own ACTH and to stimulate the production of greater amounts of cortisone and Compound F from the patient's own adrenal cortex. Or, the patient can be given the cortisone, which is a syn-

thetic product, hypodermically, orally, topically in the form of ointment or drops; or it can be injected subconjunctivally. This supplemental treatment, if given in adequate doses, brings about a general systemic reaction and as a general rule arrests the progress of the inflammatory lesion. The more acute the lesion and the earlier the treatment is started the more complete is the final control. Very often in the more acute inflammatory lesion only two or three days of treatment are required—just enough supplemental therapy to help the patient over the early, overwhelming insult to the tissues—after which his own hormonal agents can control the inflammatory processes. The chronic lesion, in which the insulting agent is more virulent and persistent, requires a longer period of treatment. If, during this period of treatment, the other natural protecting mechanisms of the body can neutralize the allergens or toxic substances which originally acted as the insulting agent, there will be a lesser danger of recurrence immediately upon withdrawal of this supplementary ACTH or cortisone therapy. Recurrence and persistence of the lesion will occur and will go on to damage the eye severely if these other defense mechanisms are inadequate or if there is an insufficient amount of natural hormone response. It is well known that ACTH and cortisone cannot be given indefinitely without disrupting other members of the endocrine family, thus causing metabolic and physiologic changes of serious character. Fortunately in the field of ophthalmology we have an advantage in the availability of the topical cortisone or hydrocortisone. These preparations can be applied directly to the eye for apparently indefinite periods and will frequently keep anterior segment lesions under control; yet the dosage is so small as to have no influence on the general physiological pattern of the endocrine system.

Use of ACTH-Gel

During the past year some progress has been made in the control of the more chronic types of lesions. This has been accomplished by the use of the lower-dosage, long-acting ACTH-Gel. This method of administration by subcutaneous injection provides a much more even and prolonged absorption and requires doses one-half to one-third those given by the regular route. Because of this lower dosage the length of treatment can be prolonged without seriously jeopardizing the endocrine balance of the patient. Many of these patients can be treated as ambulatory cases who receive daily or every-second-day injections for several weeks. It is also now known that the addition of small quantities of thyroid extract, another hormone, during the protracted courses of therapy further protects the patient from untoward generalized reaction. The longer treatment can be continued without developing irreversible physiological and pathological changes the greater is the ophthalmologists' opportunity to eliminate or control the insulting agent through the use of other concurrent therapy. For example, the eradication of focal infection and the treatment of syphilitic infections with penicillin.

Speculation is often a foolish, sometimes a dangerous pastime, but many investigators involved with clinical studies of ACTH and cortisone can-

not help but look to the time when the endocrine glands and their hormones will be so well understood that therapy will be considerably more specific—so much so that on looking back on today's exciting experiences one will be alarmed at the present crude methods of therapy.

Before discussing individual disease entities and their respective responses to the hormonal agents I should like to emphasize a point in treatment. Early diagnosis and early treatment are as essential in ocular disease as in tuberculosis and cancer. ACTH and cortisone enable the ophthalmologist to bring those conditions which will respond under control very rapidly, thus minimizing the amount of permanent, irreversible damage to tissue; but once damage in the form of atrophy and scar tissue has been done, no amount of known treatment will reverse the process and restore normal tissue.

TABLE I

Ocular lesions which show a favorable response to ACTH and cortisone

Acute iritis and iridocyclitis
Acute chorioretinitis (central or focal)
Retinitis centralis
Acute non-granulomatous uveitis
Traumatic uveitis
Phacoanaphylaxis
Keratitis
Syphilitic interstitial
Tuberculous interstitial
Rosacea
Marginal ulcerative
Sclerosing
Episcleritis
Phlyctenular keratoconjunctivitis
Allergic conjunctivitis
Corneal and/or conjunctival burns

Favorable Responses

Table No. 1 lists those ocular lesions which consistently have shown a favorable response either to parenteral or topical treatment with ACTH or cortisone. Some of those listed will respond to one or the other but a few will require combined therapy for the quickest and most satisfactory results.

This, of course, is not a complete listing but does give a majority of those conditions which respond favorably. Fourteen of the types listed are potentially dangerous from the standpoint of ultimate visual loss, and among the group are several having a long-standing reputation as severely handicapping eye lesions. How severely handicapping they are depends upon the severity of the inflammation, its location and relation to central vision, and how well established it has become. With present day therapy acute iritis and iridocyclitis can be brought under control in relatively short periods of time. The acute chorioretinitis patient and those with retinitis centralis, generalized acute uveitis, if treatment is early and adequate, can expect to have very little residual loss of vision.

Traumatic uveitis, whether due to injury or surgery, usually responds readily either to ACTH or cortisone, and both drugs have been of tremendous help to the surgeon in sparing him the worry of the inflammatory process that occasionally follows the uneventful intraocular operative procedure. Even the usually severe, sometimes prolonged phacoanaphylactic reactions can usually be controlled with nothing more than subcon-

junctival or topical applications of cortisone. The vascularization, ulceration or scarring of the cornea represented in the various types of keratitis as listed can largely be prevented and certainly may be minimized by early treatment with these agents, but the old quiescent scars left by keratitis cannot be appreciably altered. The same can be said for phlyctenular keratoconjunctivitis and episcleritis. Allergic conjunctivitis, although not a blinding disease, has considerable nuisance value to many people, and can be controlled by topical applications of cortisone, with the patient becoming asymptomatic though the allergy is not "cured." Burns of the conjunctiva and cornea appear to have a much better prognosis when a combination of cortisone and selected antibiotics is used, inasmuch as secondary infection and heavy scar formation are minimized.

TABLE II

Representative group of ocular diseases that show variable responses to ACTH and cortisone

Chronic nongranulomatous iridocyclitis or uveitis
Chronic granulomatous iridocyclitis or uveitis
tuberculosis
syphilis
sarcoid
sympathetic ophthalmitis
Chronic disseminated choroiditis
Optic neuritis—retrobulbar or papillitis
Retrolental fibroplasia
Herpes zoster ophthalmicus
Dendritic ulcer
Recurrent corneal erosion
Non-specific keratitis profunda
Vernal conjunctivitis
Postoperative glaucoma filtering operations

Variable Responses

In Table II the first three conditions—chronic nongranulomatous uveitis, chronic granulomatous uveitis in its principal types and chronic disseminated choroiditis all tend to respond partially or perhaps completely to ACTH and cortisone therapy, but the majority will recur sooner or later after withdrawal of treatment. However, lesions of this character which involve only the anterior segment of the eye can often be controlled indefinitely with topical cortisone preparations. They tend to recur if that form of treatment is discontinued before the natural defense mechanisms of the body or other concurrent treatment has been effective in bringing about an arrest of the lesions.

Sympathetic ophthalmia is perhaps the most dramatic of the group and frequently these patients are the recipients of extra attention and treatment. To date, however, the results are about as have been described, with relapses in the majority of cases reported. It is perhaps in this group of chronic inflammatory disease that the long-acting ACTH-Gel may prove of additional help to the ophthalmologist. Optic neuritis seems to vary considerably in its response. Some cases respond quickly, some show little or no response, and some improve at about the same rate as would be expected with no therapy at all. Much depends upon the etiology of the neuritis and it is altogether possible that these drugs may help us in the reclassification of the causative agents.

Retrolental fibroplasia is still a question mark in the response to the drugs. Those who have had an opportunity to examine the eyes of large numbers of premature babies have seen the preliminary stages of retrolental fibroplasia develop and then disappear without specific therapy. Whether hormonal therapy will so aid in the control of this preliminary stage as to prevent the development of a complete retrolental fibroplasia can only be determined after a great deal of careful controlled study has been given to the problem. Certainly the treatment must be undertaken early if it is to be effective, for once the pathology is established with its detached retina and fibrinous tissue changes, treatment of any type is of little or no value.

Herpes zoster ophthalmicus, more commonly known as "shingles," can frequently do irreparable damage to an eye, and it therefore seems that ACTH and cortisone are indicated as prophylactic measures in the treatment, even though there may be little or no influence on the course of the disease. Dendritic ulcer with its subsequent recurrent corneal erosion is also of virus etiology and most investigators have reported unfavorable results. The literature, however, does contain a few cases brought under control by these agents so it must still be classified as "variable" in response.

Differences in terminology and differences in interpretation of clinical findings make it difficult to evaluate the effects of these drugs on keratitis profunda but for the most part the response is favorable. Vernal conjunctivitis, like allergic conjunctivitis, can be controlled, at least in part, by cortisone ointment and the symptoms alleviated, but again the basic sensitivity remains and a "cure" is not obtained.

TABLE III

No response to ACTH or cortisone

Cataract
Chronic simple glaucoma
Retinal detachment (usually contraindicated)
Diabetic and hypertensive retinopathies
Optic atrophy
Retinitis pigmentosa
Severe or progressive myopia
Degenerative diseases—including heredo-degenerative conditions
Benign and malignant tumors
Pemphigus
Corneal dystrophies
Corneal scars
Bacterial infections

Investigations into the use of the topical forms of cortisone in postoperative glaucoma filtering operation have been received with a great deal of enthusiasm. For some time, it has been reasoned that if the glaucoma case can be found early and a filtering operation done as indicated the application of cortisone ointment postoperatively for 3 months would permit the filtration to continue and the patient would remain controlled. However, the statistics on a relatively large control series indicate but a slight percentage of improvement over the group receiving no cortisone. It perhaps can be said that cortisone ointment is helpful but not the answer to the problem of glaucoma.

Table III is a most discouraging tabulation and could well be an almost endless list of most remaining eye

diseases, but this table presents only the most common and serious afflictions, none of which respond to ACTH or cortisone therapy.

This is understandable when we recall that none of these are considered to be inflammatory or allergic in origin. Cataracts, of course, respond to surgery, as do some of the glaucomas and retinal detachments. Retinitis pigmentosa, when studied with the most exacting controls, demonstrates improvement in visual acuity, visual fields and dark adaptation with hormonal treatment, only to regress immediately to the pre-treatment level upon withdrawal of therapy.

It is disappointing that these most devastating eye conditions do not respond to ACTH or cortisone but it is reassuring to know that in almost each instance there is constant and intensive investigation going forward in an effort to bring about a better knowledge and understanding of their specific problems.

In summary, ACTH and cortisone have assumed a ranking place in ocular therapeutics. The greatest benefits have been found in their use in early nonspecific inflammatory lesions of the eye. In general the more acute the process the more effective the response to these agents. Their availability, however, should not be presumed to lessen the need for their appropriate use and proper diagnosis, nor does it lessen the need for established concurrent therapy and follow-up.

A Public Disservice

AN editorial in the March 15, 1952 issue of *New York State Journal of Medicine* discussed an act before the Legislature to amend the Education Law so as to permit "the sale of any ready-made reading spectacles or reading glasses equipped with spherical convex lenses, as merchandise, in any store or established place of business in the State by persons, firms, or corporations, who do not assume directly or indirectly to adapt them to the eye, and when the selection of such spectacles or glasses is at the discretion of the purchaser and is treated in a manner similar to the sale of any other magnifying glass."

The editorial said, in part:

"The proposed amendment to the law as quoted above is bad. It would permit anyone to purchase these ready-made reading spectacles as merchandise with no proper guarantee to the purchaser of the quality of either frames or spectacle lenses and upon the sole responsibility of the purchaser who undertakes to judge whether he needs such merchandise and of what degree of spherical convexity. While this is bad enough, there are graver aspects of such proposed merchandising. For physiologic reasons, people over forty years of age are those who would avail themselves of such ready-made spectacles or reading glasses, although others might do so. In any event, such a purchaser would probably not have consulted an eye physician or an optometrist.

"It is to avoid such consultation that many aging persons would make such direct purchases. Yet aging persons are the very ones in whom many eye diseases, some of them asympto-

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Oakland's Sight Conservation Program

AL TUDYMAN, ED.D.
Director of Special Education
and
FREDERICKA M. BERTRAM, M.ED.
Teacher of Sight Conservation
Public Schools, Oakland, California

The success of this work in a public school district in a city of nearly one-half million population proves that partial sight need not exclude anyone from the objectives of education. Participation of the partially seeing in group action should begin early and be maintained throughout school life.

THE sight conservation program in the Oakland, California Public Schools was begun in a modest manner in 1938. It expanded as its merit was gradually recognized by the administrators, doctors, classroom teachers, and the parents of partially seeing children. Today, full-fledged in scope and reputation, it has been accepted in its entirety and without reservation.

The program is organized on a non-segregative and cooperative basis, involving interaction between the various departments of the school system. It is based on the philosophy that the pupil with impaired vision is primarily a "seeing" person, and as such, should be educated and prepared for life as a "seeing" person. There are adjustments to be made in the learning process and limitations to vocational objectives, but these are problems which have been solved in the Oakland Schools by cooperative effort and without segregation. The student is better prepared for life by daily contact with the problems of living than he would be by being separated from them.

Of paramount importance is the development of the whole child in his social environment. The development of personality is the primary function of a non-segregative plan, so that the student may be enabled to function adequately in his normal environment. This method thus affords the student a reasonable opportunity for self-realization; the advantage of normal affiliation with his peers; the probability of economic security; and the right of participation in civic responsibility. The program in Oakland differs from the segregated and partially-segregated plans, because the students carry on all their work in their regular grade room. This is made

possible by the coordinating efforts of the sight conservation teachers who travel from school to school on weekly schedules. Continuity of education is strengthened because the scope of the program includes pupils from kindergarten through high school. This plan includes the partially seeing who are mentally retarded, deaf, hard of hearing, and the orthopedically handicapped, since the special teacher goes *to* the pupil.

Criteria for Enrollment

The criteria for enrollment of pupils in the program coincide with those of other plans for educating the partially seeing. Briefly stated, partially seeing children are: (1) those having visual acuity between 20/70 and 20/200 in the better eye after correction; (2) those having serious or progressive eye difficulties; and (3) those having any special condition, which, on the recommendation of a doctor, needs the special services.

All school children of the district are given eye examinations when indicated. Teachers, nurses, parents and doctors are alerted to observe any symptoms or signs of eye strain. The Snellen and plus sphere tests are used. Pupils evidencing vision defects from the mentioned tests are referred to their doctors or the school consulting ophthalmologist. No pupil is enrolled or removed from the program unless a doctor recommends it; no pupil is included in the services unless the parents or guardians give their permission.

Director of Special Education

The responsibility for the sight conservation program is vested in the director of special education. His duties are administrative, organizational and supervisory in nature. The administrative responsibilities include the writing of budget recommendations; the requisition of special supplies and equipment; working closely with the principals of the various schools in which the partially seeing are enrolled; enlisting and alerting various departments for assistance with the program, e.g., guidance, health services, research, business, occupational adjustment, special education, audio-visual, elementary and secondary school supervisors.

Organizational responsibilities include the following: approving the special teachers' schedules; assigning and removing pupils from the program; assuring that the aforementioned criteria for sight conservation instruction are fulfilled; working closely with the department of health services to determine the best educational recommendations and maintaining complete cumulative records on each pupil in the program.

Supervisory responsibilities of the director of special education include

The school system's professional library is used as headquarters for large-type books

the following: supervising the teachers, working very closely with them to insure a dynamic and efficient program, and encouraging research.

Each term the teachers of the partially seeing plan schedules according to the types of children enrolled, their age, and the schools in which they are located. The principals of the schools are consulted for time approvals and room assignments. This schedule, when set, is approved or adjusted by the director of special education after which it is duplicated and distributed to all school principals, nurses, administrative and supervisory personnel. The schedules are flexible enough so that new cases can be adequately absorbed.

Partially seeing children are assigned to the teachers by the director of special education after he is assured that they are eligible under the criteria set for the program. The teacher is notified of the assignment through the issuance of an assignment card. A similar card is made and kept by the director. The cumulative record is then filed and made available to anyone concerned at any time. When the pupil leaves the program for any reason the assignment card formerly issued to the teacher is returned with the appropriate remarks, e.g., transferred out of district, or medical recommendation due to vision improvement. The case and cumulative record are then closed.

Cumulative Record Folder

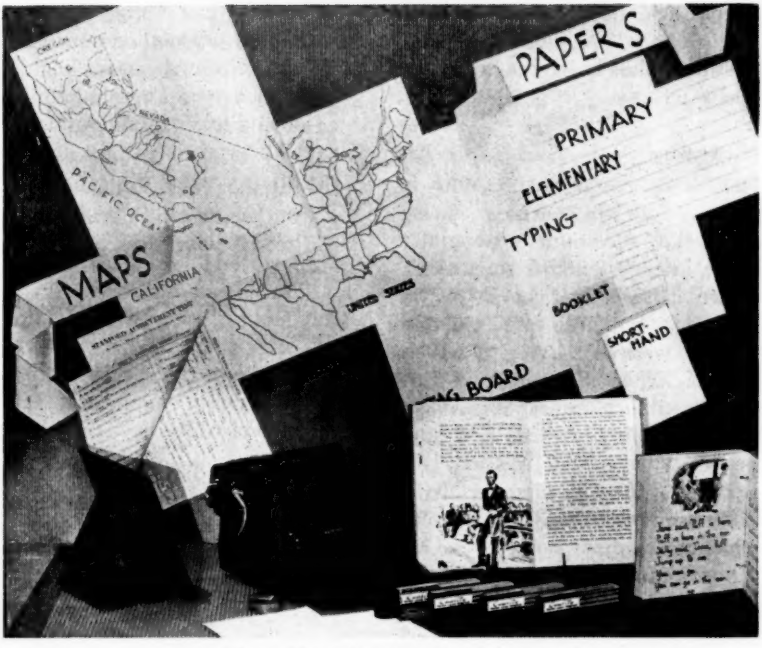
The cumulative record consists of a request for special services form which is usually made out by the school nurse. The proper medical examinations and recommendations by the doctors are a part of the record. A running or anecdotal record is kept of any relevant facts about the pupil. Each teacher of the partially seeing submits a semester progress and pertinent fact report on each child, which is then entered into the running report.

All partially seeing children receiving special services are reported to the principal, deans of boys and girls, counselors and nurses by the special teachers. To insure satisfactory medical follow-up the nurses are notified of the medical recommendations by the department of health services.

Intra-departmental Cooperation

The unique type of cooperation between the various departments and the sight conservation program is worthy of much praise and commendation. In this brief article justice cannot adequately be given to all departments involved; however, a few examples of the high type of cooperation must be expressed. The research department cooperates in setting up standards of testing and in purchasing and administering special tests, some of which are enlarged; it is open to any suggestions on tests to be purchased. The purchasing department takes great pride in spending the necessary time to investigate, bid for and procure many hard-to-get and hard-to-find supplies. The department gives of time and patience to satisfy the exacting standards of educational materials used with these pupils. The audiovisual department makes available space, materials and distribution facilities for certain equipment.

The greatest academic resource upon which the sight conservation program in this system relies is the library department. There must be a



Some of the supplies and equipment available to pupils

headquarters for large-type books in such a program. In this case the help of the director of libraries was enlisted. To implement the instructional program the cooperation of all the school libraries and the staff of the teachers' professional library is used. Qualifications and criteria for the selection and evaluation of the best books for these pupils are discussed. The need for such books is also made obvious to them. Consequently, all of the libraries are constantly on the alert for new books which meet the specifications and needs of the partially seeing.

The teachers' professional library separately catalogues selected books. The file is constantly expanding. Periodically a mimeographed list is compiled for circulation to the regular classroom teachers having partially seeing pupils. The reading lists contain the title, author, age level and relative size of the print.

In addition, the textbook headquarters, or the professional library, performs an important service for the special teachers by reserving a section for housing the many books commercially produced in enlarged type. The books are circulated only upon the recommendation of the special teachers. Summer checking-in and repair of these books has been accepted as a part of the library's duties. The books either are carried by the teachers of the partially seeing or sent to the schools through the weekly school mailing service.

All of the secondary school libraries have the 18-point type Winston dictionary, published by Stanwix House.

Most of these have been gifts from service clubs whose interest in such contributions has been created by the special teachers.

The Curriculum

The non-segregative program in Oakland offers the partially seeing student the maximum opportunity to share in the standard curriculum. He participates more completely in the experiences offered to all children in their day-to-day living together. Thus, the sight-saving program parallels the curriculum of the school program but also modifies and augments it with special methods for conserving sight. The function of the special teacher is to assist the student to make these adjustments and to attain maximum use of his abilities despite the handicap.

In the initial conferences in the school with both faculty and student, recommendations are made as to seating, use of the chalkboard, the usual, basic eye hygiene rules, use of special materials, and specific directions for the student in relation to his eye difficulty.

The partially seeing students are given the benefit of tools, techniques, and methods in which the teachers have not only been trained, but also those which they have developed through practical experience. Examples of these follow:

1. Eighteen and 24-point type books similar to adopted texts are used when available; otherwise, those with similar content are used.
2. Special paper is supplied for use in language arts, mathematics and typing. This paper meets the usual high sight-saving standards.
3. Training in listening is given and the auditory method is encouraged. Transcriptions, recordings and planned radio programs are utilized for auditory training and enrichment.
4. Materials and outlines are made from magnatype stencils or typed directly, whichever is more practical.
5. Large print or magnatyped tests are supplied to the students.
6. The use of the specially-prepared bibliography of approved text and supplementary books is taught.
7. Good use of selected pictures and other visual materials is encouraged.
8. Word lists, essential to the completion of assignments, are compiled and enlarged.
9. Enlarged outline maps which coincide with the regular social studies curriculum are supplied to the students.
10. Typing is taught as early as the fourth grade, using methods suitable to young children. A clear, specially-prepared typing chart is supplied.
11. Sturdy, specially-constructed metal stands are supplied to hold textbooks and typing assignments.

Specific examples of how subject materials are adjusted by the special teachers in cooperation with the regular classroom teacher will now be given.

Reading. The reading program for partially seeing students closely approximates that which is recommended in the standard curriculum. Books in 18 and 24-point type are used when-

ever necessary. In the first two years of reading it is absolutely essential that the student be kept with the class. All readers are not always available in large type. When necessary the special teacher enlarges the books for the child. In beginning reading large charts are often used, which the child can usually see if he is placed in the proper situation. The teacher of the partially seeing confers with the classroom teacher and makes recommendations as to the best position.

All through the reading program the child is kept with his group as far as possible. This can be accomplished by a conference with the classroom teacher before the new term begins. Arrangements are made at that time to correlate large-print books with the class reading program. When this is not possible, and the student is a good reader, he uses the large-type material and reads by himself. However, he participates with the group by being permitted to read to them from his book and thus share his experiences. He also listens to their stories and is not denied the pleasure of the other children's experiences. If the child is weak in reading every effort is made to enlarge his material and keep him with a reading group. If the school has a remedial reading teacher or an elementary assistant the teacher of the partially seeing may request temporary help for the student through the principal of the school. If this assistance is approved, she cooperates with the reading specialist on reading materials. Although the sight conservation teacher often assists the child with reading, the total reading program is not her responsibility.

Spelling. In spelling, the partially seeing are kept with the class by

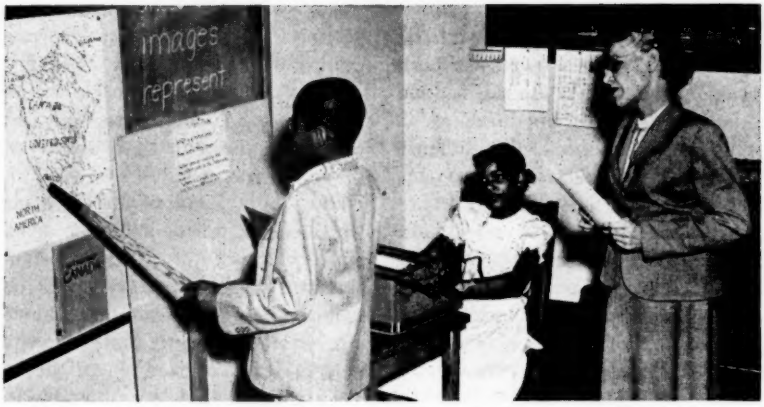
Kindergarten and early primary pupils participate in selected handwork activities

means of enlarged materials and instruction on study methods. They are also instructed in how to place their words on the special paper provided in the elementary school and how to place it on the regular paper provided by the junior high school. When the spelling text is changed the work has to be re-adapted. If the student has mastered the typewiter keyboard, he is taught to study his spelling in this way. It is a kinesthetic method of learning which often brings remarkable improvement in spelling. In connection with spelling and the language arts the large-type edition of the Winston school dictionary is made available through the individual school libraries.

Language Arts. In coordinating the language arts program some special techniques are used. On the junior and senior high school levels, when assignments of exercises in correct usage are made, the sentences given are enlarged on the magnatype machine, if it is essential for the student to have it in 18-point type. There are also books in 18-point type available. Manuscript writing is advised throughout the elementary grades, because of its legibility and simplicity of form. Its neatness is important to the partially seeing child, since neatness makes for clarity. Mistakes are at a minimum because the child can so readily detect his own errors. If he wants to study from his own note books, this writing is much more easily read and so causes minimum strain. When students use the cursive form they write larger than average. Those who are taught typing use it in the language arts program by learning to take dictation and to write their own thoughts directly on the typewriter. Creative writing is stressed as a sight conservation method. Copy work on the typewriter is not encouraged. For the handwriting which is required in various subjects in the curriculum the partially seeing students use a so-called "sight-saving" pencil. Any pencil with a soft, dark lead is satisfactory.

Arithmetic and Mathematics. These pencils are also used in arithmetic and mathematics. The children use 8½" x 11" paper instead of the smaller size in common use. They are taught just how to place work on the paper for the greatest efficiency in seeing. Addition and subtraction may be placed anywhere on the paper provided enough margin is left for extra numbers involved in carrying or borrowing. However, the children are encouraged and trained to carry as many numbers mentally as they can. Cluttered papers are inclined to make for errors. Large multiplication problems are placed in the center or near the right-hand edge of the paper, because the work moves to the left. In this way the children avoid crowding the work; otherwise, they tend to add the wrong columns. Long division, on the other hand, is placed at the left, because the work moves to the right. The children are instructed to be careful in placing the numbers under the correct places to forestall error. This is also taught in the regular classroom, but since the children with poor sight do not see the board well, they are given seat instruction and further instruction by the special teacher.

Spacing in fractions is a primary consideration, since the children must remember to allow enough space between the operations to permit the



Partially seeing elementary school pupils receive special instruction

cancellation numbers to be written as large as other numbers, so that they will be able to see them without undue strain. These habits are used on the high school level in algebra and geometry. In the latter students are trained to make larger than average diagrams. When the children are learning their addition and subtraction combinations and later the multiplication and division facts, sets of cards are made by the teacher of the partially seeing with a brush pen, to assist the child further in learning the facts for which he is responsible. He uses them with other children in his class and at home with his parents if he is having undue difficulty. Some arithmetic books in 18-point type are available and Stanwix House prints a first-year basic algebra and a standard geometry. These are used for special assignments and drill. The teachers again make a large size sample test which is given to the partially seeing student. The teachers enlarge materials when essential and the children are permitted to do work on the chalkboard with the other children. They never copy from the chalkboard.

Art. The trend in the art curriculum toward large creative forms is well suited to the needs of partially seeing students who find real satisfaction and release from tension in this form of self-expression. Finger painting and work with clay are particularly suited to the needs of this group. No fine, intricate work is ever permitted. In fact, so little of it is ever done that it poses no problem. The one form of art which is never included in the program for the partially seeing is drafting. Any type of art work which requires the use of squared or graph paper is also banned. Most of the crafts are suitable also. However, to insure best conditions for the students, conferences are usually arranged with the crafts teacher, and recommendations are then made.

Music. Music is another excellent form of release for the partially seeing. They learn to sing by rote. It is recommended that they be placed in front of a good singer, so that they may learn by hearing. In the higher grades where words are no longer learned by rote, but read, the special teacher enlarges

the words on the magnatype machine. If the sight loss isn't too great, the children are often allowed to take instrumental music. When this is done they concentrate on memorizing as soon as possible. Some of the students have been very successful with this method. High school students who are interested in listening to music are programmed for music appreciation. Besides being good training in listening, it is also a means of enrichment.

Physical Education. There are many problems related to the physical education curriculum for the partially seeing child. How much he is permitted to take part in the program is directly related to his particular sight difficulty. Individual differences are the primary guide in this area. There are certain specific rules for all partially seeing students: Rough play is prohibited, because a blow on the head might have unfortunate results. Highly competitive games are not indicated, since they cause discouragement. The other children do not willingly choose a child for a team if his chance of winning is poor. The partially seeing are able to participate in work with small groups and in many of the games and rhythms.

At the present time some work is being done in selected schools with children who have poor motor coordination. They are being given the opportunity to learn skills with balls, in running, etc., in small groups. They later use them with the class group. Some of them have poor general health as well as an eye difficulty and may be easily fatigued. Such children are programmed for rest class in lieu of physical education.

In the high schools, the recommended sports are swimming (no diving); handball; folk, interpretive and ballroom dancing. Special provisions always have to be made for students with albinism. They are so sensitive to light that usually they have to be kept indoors on very bright sunny days. Some of the high schools have table games which they can enjoy, or they may go to the solarium where they are properly cared for.

Some of the techniques of handling the partially seeing student in a nonsegregated program have been indicated. It would be impossible to include all the adjustments necessary, because the curriculum changes, the cases vary, the needs are individual, and new situations and combinations of events arise continuously. However, the general recommendations and the proven methods together with an understanding of the major problems, should be of some value.

Counseling and Guidance. It has been stated that the level of development at which the average student is interested in his own personal advancement is between middle and later adolescence. By adolescence he usually becomes aware of certain needs in order to function adequately. These needs include striving for and acquiring:

1. Optimum physical and mental health.
2. Acceptable personal appearance.
3. Intellectual power.
4. Satisfying social relationships.
5. A full life by enrichment.
6. Skills in efficient planning for study, recreation and effective living.
7. Vocational knowledge and use of it to plan for the future.
8. Ability in self-evaluation.

Students with impaired eyesight have a particular need for personality development. Their adjustments to life situations may be made more difficult because of the handicap involved. They have need to understand themselves, so that they will be capable of functioning in society within their limitations. They are seeing people and function as such; when they become adults, they will be expected to react to life as seeing people. They have a grave need for understanding their own worth. They need to develop an ego which is strong enough to withstand disappointments and frustrations, positive enough to behave constructively and secure enough to combat unnecessary anxiety and doubt. For these reasons a course in personality building is offered to partially seeing high school students. The material includes both general information for all people and specific learnings for the partially sighted.

Counseling is inherent in any program of personality development. In the case of the partially seeing it is essential to draw from knowledge of general counseling as well as from information relating to their own special problems.

Counseling problems, therefore, are individual and never static. It is impossible to anticipate all exigencies but certain specific patterns manifest themselves with some frequency and include the following:

1. Special programming is a necessity in any non-segregated plan of sight conservation, because of the limitations of the students. However, they must not be denied participation in required subjects where adjustments of material are possible. Certain subjects are taboo—drafting, sewing in most cases, filing, shorthand and any subject requiring close application to fine, intricate, or small work. On the positive side, typing is required as a "sight-saving" technique. Programs are often shortened to eliminate strain. Modified physical education is recommended in accordance with the visual impairment. Music appreciation and the dance, drama, and some large art forms are suggested as a means of releasing tensions and for sheer pleasure.
2. Preferential seating is a prime factor.
3. Personal aptitudes, interests and abilities are determined through long term observation and special tests. Vocational information is taught.
4. Part-time job placement on a 4-4 plan is available and used.
5. Home and family life courses are taught.
6. A follow-up program is achieved through the cumulative record system.
7. Rate of achievement in school is carefully observed and paced to fit the needs and abilities of the handicapped pupils.
8. Recreational needs and opportunities are recommended.
9. Co-curricular activities are carefully investigated and students are guided into suitable channels.
10. Each student is encouraged to aspire as high as his abilities and disabilities permit. A realistic approach is taken on this matter.
11. Good study habits are specifically taught.

It should be pointed out that the counseling and guidance of the partially seeing students is not monopolized by the special teachers. All of the usual counseling and guidance resources of the school system are given to the handicapped student. Since the special teacher has more opportunity to have contact with the partially seeing she is relied on to be a very forceful and influential adjunct to the counseling team.

Conclusion

The worth of Oakland's program for the partially seeing has been demonstrated by the hundreds of students trained under the program who are socially and economically competent citizens. They are living proof that it is possible for the partially seeing to be educated efficiently without even partial segregation. It proves that partial sight need not exclude anyone from the objectives of education. The more normal their education, the more fully will realization of these educational objectives be approximated. Positive attitudes toward the ability of the partially seeing to be participating members in group action should be instituted as early as possible and maintained throughout their entire school life.

A detailed report of the sight conservation program in the Oakland Public Schools is described in an unpublished Master's Degree Thesis by Fredericka M. Bertram, *A Presentation of the Philosophy and Method of the Oakland Plan of Sight Conservation*, Mills College, Oakland, California, 1951.

Film List Available—A list of films on eye health and protection which may be rented or purchased from various sources is available on request to NSPB headquarters, 1790 Broadway, New York 19.

William H. Luedde, M.D.

We regret to report the death of Dr. William H. Luedde, director emeritus of the Ophthalmology Department of St. Louis Medical School, on March 19. He was a founder of the Missouri School for the Blind; the United States Public Health Hospital for Trachoma at Rolla, Missouri; and the St. Louis Society for the Blind. In 1933 he was awarded the Leslie Dana Gold Medal for these and other public services.

Since 1919 Dr. Luedde served as an ophthalmological consultant to the National Society for the Prevention of Blindness. He was an active participant in its plans and program both nationally and in his own state of Missouri up to the time of his death.

New Filmstrip on Eye Protection for Use in School Shops

PROTECTING EYES AT WORK is the title of a new 50-frame filmstrip in full color designed for students in junior and senior high schools and vocational schools. Produced by Popular Science Publishing Company in cooperation with the National Society for the Prevention of Blindness, it emphasizes the importance of developing good eye safety habits while training in school shops. The filmstrip demonstrates how eyes are protected in a variety of industrial situations and shows types of protectors appropriate for various jobs.

A valuable teaching guide accompanies the filmstrip which may be purchased from Audio Visual Division, Popular Science Publishing Company, 353 Fourth Avenue, New York 10. Price: $6.00.

The Role of the Public Health Service in Eye Research

PEARCE BAILEY, M.D.

Director, National Institute of Neurological Diseases and Blindness
National Institutes of Health, Public Health Service, Federal Security Agency

In the conquest of blindness there is need for constructive relationships between the federal agency and all voluntary organizations whose goals are similar.*

THE National Institute of Neurological Diseases and Blindness was established by Congress in 1950, but since funds were first made available this current year, I am in the position of talking about an infant whose motions and directions require additional strength. Just what future can be predicted for the infant—in spite of parental hope and pride—depends to a large extent upon meeting its needs for nourishment and upon its parental guidance. The Society was one of those responsible for the conception and birth of the Institute, and it is my hope you will aid in its rearing.

There is good reason for constructive relationships between the Institute and all voluntary organizations whose goals are similar—the conquest of blindness. Our modes of attack, of course, will differ. Our main function is research—and our own future record of achievement will depend upon the success of our attack on those ocular disorders before which we now seem so helpless—cataracts, the glaucomas, optic atrophy, retrolental fibroplasia, macular degeneration and other problems.

On this occasion I shall not be able to tell you everything we are doing; moreover, the research we are supporting is in that exploratory stage where success or failure cannot possibly be predicted. However, I think you will be interested in knowing something about the nature of our program and the way in which it is being guided.

Research Grants Program

Nourishment, as I have mentioned, is an important factor, and the Institute's total budget for this current year is somewhat over $1,100,000. Of this sum $1,015,000 is allocated for support of research grants and, as of this date, $800,000 of this allocation has been spent to support investigation of neurological and sensory disorders—among them cerebral palsy, epilepsy, multiple sclerosis, parkinsonism, muscular dystrophy, disorders causing blindness and deafness, and others.

More Institute funds are now being devoted to the study of ocular disturbances than to any other group of disorders—somewhat over $300,000,

* A paper presented at the Annual Conference of the National Society for the Prevention of Blindness held in Pittsburgh, Pa., March, 1952.

or over one-third of the total. I might mention that according to the National Research Council's recent survey of the field, less than $400,000 was spent by all sources in support of medical research grants in ophthalmology in 1951. Consequently the Institute's position, by virtue of its expenditures, is a leading one. This is not a subject for self-congratulation, however; it is ironic comment on the inadequacy of research in the blinding eye diseases. Some authorities estimate that funds needed to support an adequate eye research program indicate a minimum of $3,000,000 annually in the preliminary stages.

The $300,000 we are now spending to support research, however, does allow us to examine a variety of ocular problems. Some of this work is directly related to the disease entity involved; other work, concerned with broad problems in the structure of the eye or the dynamics of vision, will be only indirectly relevant to a specific eye disturbance; or indeed to several of them.

We are, for example, supporting an investigation on the clouding of corneal grafts, a problem responsible for the failure of 50 to 65 per cent of all such transplants. Among the directions this investigation will take is pursuit of the possibility that corneal clouding is due to a donor-recipient sensitization and that it may be eliminated by cortisone applications prior to transplant.

Cortisone and ACTH, of course, have been widely tested for the treatment of eye disorders; indeed, prior to establishment of the Institute, the Public Health Service supported a broad project of this kind, wherein 800 persons suffering many eye disturbances were treated in an effort to establish "yes" or "no" answers regarding these compounds, and, where successful, what dosage schedules were the most feasible.

We have not reached the end of refining our therapeutic procedures with these steroid hormones or, more especially, using them as a tool to establish the relationship between endocrine functions and eye functions. We are on the one hand supporting an investigation to see if cortisone and ACTH can control the exudation and inflammatory reaction produced in the choroid and retina by diathermy operation for retinal detachment; and on the other hand, another investigator is following down the clue that the progress of interstitial keratitis and syphilitic primary optic atrophy is related to endocrine reactions. Preliminary data from other sources indicate that ACTH and cortisone may be of use in the treatment of interstitial keratitis.

New Project

I should like to mention also one of our projects in retrolental fibroplasia because of the current interest in this problem. Briefly, this work will be an attempt to study in experimental animals the influence of two ordinary hospital procedures in the treatment of premature infants—one, the administration of oxygen, whereby the investigator will test the toxicity of both high and low oxygen tensions on the retina; the other, the influence of multi-vitamin emulsifiers, which are administered routinely in hospitals to both full-term and premature infants. Several reports have indicated a drop in the incidence of retrolental fibroplasia where hospitals have abandoned the use of these emulsifiers, but further

survey is necessary before this fact can be shown to be of any direct significance.

Of a somewhat broader nature is a long-term project we are supporting where the investigator will attempt to construct an apparatus capable of making precise electrical measurement of retinal changes. These measurements of potentials, coordinated with other potentials now measurable, could give us the first opportunity of evaluating the effect of various noxious agents on the vision of experimental animals—and will also extend our means for testing new drugs which may be useful for treatment.

Another one of our investigations is engaged with the study of the development of visual pathways in human embryos and fetuses at all stages from first appearance to birth. Evaluation of normal and abnormal developments in the growth of optic nerves, optic chiasm, geniculate bodies, etc., may throw some light on the causes for the high percentage of blinding eye conditions which are believed to be of prenatal origin.

Some of these investigations, of course, are the concern of fundamental research and all its disciplines—such as biochemistry, biophysics, physiology, endocrinology and psychology, among others. And it is these skills which have yet to be drawn into the field of ophthalmological research. Dr. Jonas Friedenwald, for example, has pointed out that there are only two mature biochemists in this country who are devoting their full-time energies to ocular problems, and almost the same situation holds for biophysics where research on the retina and visual sensation especially are needed.

That basic ophthalmic research has not developed further has been due in large part to the lack of funds to support it. With the increase of funds available for research through the Institute's program of grants-in-aid, we can expect more and more scientific technicians to be interested in pursuing investigation of the ocular diseases. This interest and attraction, of course, does not come totally of itself; it will demand specific encouragement not only by the government but also by all those who are interested in expanding ophthalmic research.

Processing of Grant Applications

I should like to outline briefly the processing of a research grant application from the time it reaches the Institute to the time it receives formal approval or disapproval. An investigator at some university or medical school, let us say, wishes to make application for a grant. The procedure: He writes to the Division of Research Grants, National Institutes of Health, and requests an application blank. He must complete this blank and return it, and depending on when he hopes to initiate his investigation he will return it prior to three deadline dates—November 1, March 1 or July 1, with the probability that he will know whether the project has been approved or disapproved within three to four months later.

Grants applications in ophthalmology pass from the Division of Research Grants to a special study section, a group of approximately a dozen distinguished non-governmental scientists. This study section reviews each application, and as a group recommends for disapproval or approval. The application and recommendation then passes on to the National Advi-

sory Neurological Diseases and Blindness Council, composed, by law, of six distinguished scientists in the field of neurology and ophthalmology and six distinguished laymen who are active in related areas of public health. This group makes final recommendations at three yearly meetings, and subject to the approval of the Surgeon General of the Public Health Service the Council's decisions are then made known to the applicant. Although the study sections and Council pass on the general design of projects, just where and why an investigation goes is the responsibility of the investigator alone. For the government maintains a strictly hands-off policy, not only because freedom of research is traditional in this country but because it is the eminently practical thing to do.

Training and Teaching Stipends

The Institute itself is adding to the nation's research potential even further through development of its fellowship program. This program permits the award of stipends to promising students and investigators studying for their doctorate degrees, doing postdoctoral work, or otherwise engaged in special projects.

The funds allocated to the Institute in 1952 for support of research fellows in both neurology and ophthalmology amount to $54,000. We hope that these funds will be substantially increased so as to help guarantee that promising workers will be able to continue their development and to assure the nation a continuing supply of medical research manpower in both war and peace.

It is also our hope that funds will soon be available to aid in the initiation and development of departments of ophthalmology at those universities and medical schools which sorely need them. We foresee that such teaching grants would not only increase the number of teachers of ophthalmology in those areas of the United States where they are in serious short supply, but would strengthen that small corps of clinical investigators who are willing and able to devote time to application of research findings made in the laboratory, and thus close the gap which now exists between clinic and laboratory.

Intramural Research Program

So far, I have not mentioned the work being undertaken by the Institute at Bethesda, Maryland, where we are located. Due to limited funds, we have begun only one project in cooperation with the National Microbiological Institute. This investigation will, I think, be of special interest to you. As many of you know, chorioretinitis frequently appears as a symptom of neo-natal toxoplasmosis. There has, however, never been any evidence that toxoplasmosis affecting an adult has ever produced ocular manifestations. Some evidence of this fact has now appeared. As a result of research done on preserved eyes at the Armed Forces Institute of Pathology very recently, and verified by Dr. Leon Jacobs who is responsible for our project, toxoplasmosis infection has been found present in some of those adult eyes which had suffered chorioretinitis. Dr. Jacobs is going to pursue this work; he will examine a large number of individuals suffering various diseases of the eye—to see by blood test whether toxoplasmosis does in fact occur more often in those

suffering eye disorders than in those who do not.

Actually there is a great deal of toxoplasmosis present in the population, with the incidence increasing in the upper age groups where the incidence of eye disease also mounts. While 65 per cent of those persons above 50 by blood test show toxoplasmosis infection, they present no symptoms; the course of this infection is sub-clinical. These facts have led Dr. Jacobs to determine whether chorioretinitis may not be the result of long-term, sub-clinical toxoplasmosis infection.

The full development of our own intramural research program must await the opening of the Clinical Center in early 1953. The Center is a specially-constructed hospital for basic and clinical research. The National Institute of Neurological Diseases and Blindness has been assigned 42 beds there and approximately double that number of adjacent laboratories. The patients who occupy these beds will be especially chosen to meet the needs of a specific research problem initiated by the Institute. If, for example, we were interested in exploring certain aspects of glaucoma, we should send out a call to physicians and hospitals for referral of those glaucoma patients who would meet certain similar diagnostic criteria, including similarity of symptoms, progress and duration of the disorder, age, sex, and possibly economic or hereditary background. The patient's own physicians will be informed of the progress and results of treatment, and upon conclusion of the study the patient is referred back to the physician's care. Where necessary, special cooperative relationships will be developed with hospitals and health agencies in the patient's community for treatment after discharge.

We have as yet no definite research program plotted for the Clinical Center, but we have developed the research structure to some extent and are screening applicants to fill key posts. Dr. Seymour S. Kety, formerly professor of clinical physiology at the Graduate School of Medicine, University of Pennsylvania, has already been appointed to the post of director of basic research, and he will guide our program of laboratory investigation through the following research sections: anatomy and pathology, neurophysiology, biochemistry, experimental psychology, epidemiology, biometrics, sociology and instrument development.

A clinical director, not yet appointed, will decide specific projects for ophthalmic investigation in coordination with the scientific director. Clinical work will be closely integrated with projects under investigation by the basic research groups and indeed will often be responsible for the initiation of laboratory investigations. We think one of the most important functions of the Clinical Center is its physical structure by which the cross-fertilization of basic and clinical research is directly stimulated by having specialists in both working side by side. Such a close relationship will act also to narrow the long-time interlude which usually occurs between a laboratory finding and its final clinical application.

As always in discussing programs we are talking more of structure than of men. Nowhere should this be less so, however, than when we speak of research—for perhaps more than other work, its success is less determined by

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Research Program of the National Society

WILLIAM L. BENEDICT, M.D.

Rochester, Minnesota
Chairman, NSPB Committee on Research

Results of studies promoted by NSPB in recent years have been so fruitful as to justify augmented funds for increasing facilities and personnel in existing laboratories; also for stimulating research activities in various schools and hospitals.*

IT has been a privilege for the National Society for the Prevention of Blindness to support basic research and to encourage the continuation of clinical research and statistical reviews by providing grants-in-aid to institutions and individuals who are engaged in the study of hazards to vision. The accomplishments of workers in the field of vision in the past twenty years have been greatly accelerated by the force of the united efforts of lay groups, scientists and professional men whose interests are pooled in the principal objective, the prevention of blindness.

The Society has a noteworthy record of achievement in sight saving. It early advocated legislation to make compulsory the employment of hygienic practices in obstetrics and the use of effective medication in the eyes of the newborn to control one of the most frequent and the most tragic of all causes of blindness, ophthalmia neonatorum. It has joined forces with safety organizations in the effort to reduce industrial accidents, and collaborated with illumination engineers in the endeavor to mitigate the harmful effects of improper lighting consequent to the vast industrial expansion through three great wars. It has instigated investigation into the probability of inheritance of disease and promoted the pooling of information gathered at remote centers on the occurrence of comparatively rare eye diseases and their treatment.

The field of activities of the Society has been expanded as rapidly as sound organization and financial resources would permit. The directors have been mindful of a number of ways in which its influence could be exerted with almost predictable results in reduction of the number of blind persons in the United States, and they have wisely pursued a course advised by competent counsel to make the results of their efforts most effective in the long run. The Society has recently embarked on another major project that will greatly enhance the facilities of

* A paper presented at the Annual Conference of the National Society for the Prevention of Blindness held in Pittsburgh, Pa., March, 1952.

all who are engaged in the fields of visual science and bring to thousands of people the promise of freedom from the fear of impending eternal darkness and its restriction on the opportunities for the pursuit of life and happiness.

Need for Facilities and Personnel

For several years the National Society has been aware of the great need for investigation into the causes of blindness from accidents, disease and environmental circumstances and has supported fundamental or basic and clinical research. Only by acquiring a fuller understanding of the agencies that produce blindness and the conditions which pertain to their propagation can we effectively avoid them or control them. A few years ago a Committee on Research was appointed and several grants-in-aid were made from the Society's funds to promote research in carefully selected projects. Results of these researches promoted by the Society were so fruitful that it has been the hope of the Executive Committee that funds available for research could be greatly augmented. More support could then be provided for increased facilities and personnel in existing research laboratories and activity in research could be stimulated and aided in numerous schools and hospitals throughout the nation. To this end the Committee on Research was increased in number in 1949 and an advisory group was selected to collaborate with the Research Committee in setting up a general program and to consider applications for financial aid. The Research Committee has studied the manner in which applications for aid have been considered by federal and lay agencies and has consequently developed criteria based on wide experience. A sound plan for grants-in-aid of research in the visual sciences has been developed and the Committee is ready to proceed on a scale as large as the available fund permits.

The functions of the Committee fall into two main categories:

1. *Providing annual grants for the maintenance of existing research laboratories.* "The aim is to discover basic facts, for it is only from basic facts that new ideas and developments arise. During the past twenty years, ophthalmology has progressed tremendously through emphasis on basic research in the anatomy, neurology and physiology of vision."* Continuance of basic research in a few established laboratories is essential. Discoveries of great significance have come unexpectedly during the course of routine studies in chemistry, bacteriology and the physical sciences. While there is always an objective in the mind of the professional researcher, his eyes are not closed to the possible appearance of a new point of view that may give a distinctly different aspect to an old conception, an entirely new explanation of natural processes of change in biochemical and biophysical phenomena that could be noticed and understood only by one whose training and experience in basic research provided him with a breadth and scope of knowledge peculiar to his work.

Great advances in the prevention and treatment of common eye infections have resulted in discoveries of new drugs that have enabled us to

* Imus, Henry A., Research in Vision. Amer. J. Optom. & Arch. Amer. Acad. Optom., Vol. 29, No. 2, pp. 57-68. Feb. 1952.

save the eyes of thousands of persons. New drugs are carefully tested before being recommended for use on human eyes. Professional researchers and clinicians have thoroughly studied the usefulness and the dangers of these new drugs. Recently an entirely new category of remedial agencies for use in combating eye disease, the antibiotics, has displaced agencies that a generation ago were considered indispensable.

You have learned recently of the revolutionary treatment of a wide variety of infectious diseases by antibiotics. Penicillin, one of the first known, was known for twenty years to microbiologists but only because of the keen observation of one of them, who observed that as a contaminant of cultures in a laboratory it inhibited the growth of virulent disease-producing organisms, was the usefulness of molds as aids in treating human ills brought to light.

You are also aware of the great strides in application of laboratory research to human ills that spring from the use of cortisone and ACTH, now household words. Cortisone was a laboratory product of pure science, a biochemical achievement that had no application till used by Hench and his co-workers in treatment of rheumatoid arthritis. An entirely new conception of disease processes was revealed by the action of these agents, and both have been proven to be effective in the prevention of blindness.

No one can predict new agents that may revolutionize the treatment of eye diseases but anyone can surmise that the more research that is carried on the more likely will some new valuable agents be found. The National Science Foundation has approved research grants totaling $410,000 in the field of biological sciences including biochemistry, biophysics, experimental embryology, genetics and others. The importance of sustaining research in the basic fields cannot be overemphasized. The problems peculiar to vision require special treatment and, in addition to general laboratory research in the basic fields, there must be special grants to certain laboratories that work on problems specially related to vision.

Full-time workers in research must be assured of continuous financial support as their work produces no revenue by which they can accumulate a substantial reserve for personal and family needs. Also provision must be made for training of young men in the intricacies of basic research so that a greater number of professional scientists may be available. As research is not a productive field, only a few qualified young men choose to enter into a lifetime of devotion to study in the basic sciences unless they have independent sources of income to assure them of a modest living and independence from charity in their declining years. Endowment of certain laboratories, therefore, has been suggested and, to an extent, approved by the Society's Committee as one of the principal means of supporting research.

In addition to an endowment fund which should be cumulative and held in reserve for unanticipated obligations, there should be a working budget determined, if possible, two to five years ahead. Expenditure of such funds should be left to the discretion of the director of research in his re-

spective laboratory who should transmit progress reports to the sponsor at stated intervals. The number of established research laboratories independent of commercial management is rather small. Their financial resources are not fully dependable and their existence is threatened by withdrawal of adequate support in a period of national economic depression. The fear of disintegration can be mitigated to a large extent by a promise of continued support by well-established lay organizations such as the National Society for the Prevention of Blindness and it has been proposed that a stated amount of National Society funds available for grants-in-aid of research be earmarked for designated laboratories without specified application.

2. *Providing grants-in-aid for the purchase of equipment, supplies and facilities to institutions and personnel equipped and capable of doing research on specific problems.* These are the short-term grants, usually one to three years, which require an expenditure of several hundred dollars at most. Problems of a clinical nature can be more appropriately studied in a school or hospital than in a laboratory set up for research in basic sciences. Furthermore, it requires personnel with a background of clinical experience. Where close cooperation between clinicians and research scientists is possible the purposes of both may be jointly supported for a specific objective. Such possibilities are now present in practically every state in the Union. Nearly all medical schools and many hospitals now maintain postgraduate departments of study in clinical and basic branches of medicine with research on specific problems carried on with available personnel on a limited basis. Most of the money available for grants-in-aid by the National Society has been in this category.

Our program for aids to research is now sufficiently matured for us to appeal to the public for contributions to the research funds with the confidence that a well-considered plan for equitable distribution by the Committee on Research will be continued along the lines that mature deliberation and familiarity with the field have proven to be most productive. Research, as we view it, consists not only of investigation by scientists into unsolved problems, but studies on a large scale of practical application by methods both old and new for comparison and evaluation.

You are aware of the work in research laboratories on the causes of eye diseases. Specialists in pathology, physiology, anatomy, pharmacology and biophysics are continuously searching for new clues to the causes of blinding diseases. In the clinic other workers are carefully collecting data on the incidence of blinding diseases and the correlation of general findings on complete physical examination.

The scope of research in the field of visual sciences covers social, economic, physical, psychological, industrial, commercial and educational activities. Our studies of the means to prevent blindness must include the circumstances under which eyes are used and the aids to vision that are made possible through discoveries in the way in which hazards of all kinds to useful vision can be avoided.

Boston University
School of Education
Library

Six Fields of Endeavor

To sum up the consideration of the type of research program best suited to the National Society for the Prevention of Blindness, I shall divide the fields of specific endeavor into six categories:

1. *Chronic blinding diseases of the eye.* Most common are glaucoma, optic atrophy, cataracts.

2. *Etiology of pathologic conditions of the eye* that cause blindness such as acute and chronic bacterial infection, granulomatous diseases (tuberculosis, brucellosis, syphilis), endocrine gland disturbances, malnutrition, cancer, neurological diseases, hereditary conditions, diabetes, vascular diseases and blood dyscrasias. This is probably the widest field of research, requiring the correlation of findings of a number of special tests and examinations and a great deal of statistical analysis.

3. *Substitutes for cornea, lens and vitreous.* It has been shown conclusively that vision lost because of opacities in the lens and cornea can be restored by substitution of these tissues by surgical transplant. There is some evidence that vitreous also can be successfully transplanted and more research must be done. It is largely a laboratory project.

4. *Functional blindness.* New solutions for old problems are found in the field of mental reactions of many young people who lack the stamina to cope with some of the situations in our way of living. Some feign blindness for attention, others to escape from unpleasant situations or to avoid the necessity of fully meeting certain obligations. This is a social problem which is being studied by medical and lay groups who need and deserve our support.

5. *Occupational hazards.* The transition of a country at peace to a nation at war has introduced scores of industrial hazards. Wise Owl Clubs sponsored by the National Society are an outgrowth of effort to reduce the number of persons blinded by accidents. Visual efficiency surveys for job fitness have saved employers and employees from thousands of headaches. With the cooperation of lighting engineers, studies in illumination of public buildings, schools and factories have led to comfortable seeing with diminution of fatigue. Automobile driving at present day speeds over concrete highways, sunlit by day and artificially lighted by night, has taken a tremendous toll of life, a part of which can be properly attributed to poor vision. Protection from glare is a study in itself.

6. *Surveys of public school children* in a number of cities have been sponsored by the National Society and further surveys have been suggested.

Thinking of research in the fields of vision that I have mentioned, it is obvious that available funds from the National Society for the Prevention of Blindness can be directed into laboratories for support by professional researchers as well as allocated to clinical and social fields in order to maintain balanced effect. The funds we seek for these researches must come from varied sources—private contributions, foundations, legacies, industry and sales; none from taxes nor assessments. Our research program is planned to do the most possible for prevention of blindness from any and all causes.

Diabetic Eye Conditions

HOWARD F. ROOT, M.D.

Associate in Medicine, Harvard Medical School

Studies show that patients who follow faithfully the balanced diet and the insulin treatment prescribed by their physicians are not likely to develop the severe eye lesions related to diabetes mellitus that is not under good control.*

THE characteristic complication of diabetes in young people now appears to be the diabetic retinitis consisting of hemorrhages, exudates and all too frequently malignant retinitis proliferans. These sequelae of diabetes have become more evident as the duration of life of diabetic patients has so greatly increased under the influence of the use of insulin that these lesions are intimately related to the diabetes itself. They are not dependent upon such complicating factors as arteriosclerosis and high blood pressure, a fact that has become clear only in the last few years when new methods of study and prolonged observation of patients have been made possible.

New tissue stains have disclosed new facts regarding the basic chemical pathology in the eyes. It is true that the retinal aneurysms were discovered in 1876 by McKenzie, but they were forgotten until Ballantyne rediscovered them. We now know that the earliest lesions seen in the eyes are these capillary aneurysms which occur in much greater frequency among diabetics than in non-diabetics. However, the association of these capillary aneurysms and the later lesions consisting of hemorrhages and exudates, and the vitreous hemorrhages with the characteristic diabetic kidney lesions called diabetic nephropathy or Kimmelstiel-Wilson's disease, as well as the serious neuropathy, makes it evident that the eye lesions are an early characteristic that is only a partial representation of the effects of malignant diabetes.

Recent Studies

The clinical importance of the retinal lesion is emphasized by studies which we have made in the Joslin Clinic at the New England Deaconess Hospital. The retinal lesions are directly related to the severity of diabetes and its duration as well as its treatment. In a series of 326 cases of retinitis proliferans recently followed up to January 1, 1952, 114 of the patients had onset of diabetes prior to the twentieth year of age. Eighty-six of the patients developed diabetes between the ages of twenty and thirty-nine years. Thus, almost two-thirds had the severe diabetes of youth although less than one-third of all cases of diabetes develop in this same age group. Females were somewhat more frequent than males. In only six cases

*A paper presented at the Annual Conference of the National Society for the Prevention of Blindness held in Pittsburgh, Pa., March, 1952.

of the entire group had the diabetes begun at the age of six or over.

These patients illustrated the diabetic triopathy because in this group more than a third have died, usually within three years of the development of the malignant retinitis proliferans, from kidney failure or uremia. Of those living, nearly a half have kidney complications at present. The severe neuropathy, or diabetic neuritis, occurred commonly during the first few years of this condition. Diabetic neuritis consists of pain in the legs with loss of reflexes and may go on in severe cases to paralysis associated with chemical changes in the cerebral spinal fluid. The condition is often associated with severe diarrhea and sometimes with a destruction of the bony joints of the feet resembling the Charcot joint of syphilis.

The development of tiny retinal hemorrhages and the capillary aneurysms characteristically occurs at a period varying from eight to fifteen years after the onset of diabetes. At the same time increased capillary fragility occurs. Soon, or within a period of a few years, edema of the feet and increased blood pressure develop.

It has been stated that all young patients with diabetes sooner or later develop diabetic retinitis and that this development is malignant and independent of the character of treatment given. To settle this point we have spent, in the last two or three years, much time in the follow-up of 450 patients who were selected because their diabetes began between the ages of one year and twenty-nine years. The great majority developed the disease between ten and twenty-five years. Only patients whose diabetes has lasted more than ten years and up to a maximum of thirty-four years were invited to return for a careful study of the condition of their eyes, arteries and kidneys. X-ray examinations were carried out. Special observation of the fundus by qualified ophthalmologists and in many cases photographs of the retina were made. It was found that a close relation existed between the development of these characteristic complications and the kind of treatment which the patient had carried out. The degree of control of the diabetes proved to be an important element in postponing or preventing the retinal lesions.

326 DIABETICS WITH RETINITIS PROLIFERANS

Ages at Onset of Each Condition

	0–19	20–39	40–59	60 and over	Total
Diabetes					
Male	62	34	35	3	134
Female	52	52	85	3	192
Retinitis Proliferans					
Male	1	66	46	21	134
Female	1	54	87	50	192

Definition of Control

The control of diabetes needs definition. These 450 patients were divided into groups according to the kind of treatment they had received. Thus patients under good and excellent control had taken insulin continuously from a period less than a year after the diabetes began. They had followed faithfully diets prescribed by doctors. They had tested the urine regularly every day in an attempt to adjust insulin dose and diet with relation to changes in the urine test in the effort to keep the urine sugar-free at least a part of every day. Finally, they had had examinations by physicians at least once a year with urine and blood tests; and when these laboratory tests were checked they were satisfactory, although not always perfect. These patients had never had coma.

Patients under poor control had had diabetic coma which means the maximum insult in diabetes. Their insulin treatment had been begun at periods sometimes two or three years after onset of diabetes. Although they had taken insulin they had stopped testing the urine and therefore did not change the dose each day or two in the attempt to make sure that the urine was sugar-free each day. Since they made no test of the urine they did not follow careful diets, nor was the diet weighed or measured. Since they did not feel the need of tests they stopped visiting doctors; and in this group patients sometimes had not had an examination over periods of from three to eight years. They said they felt so well taking the insulin that there seemed to be no need of attending a doctor's office.

Among these 450 patients the outstanding facts indicated that the prevention of diabetic retinitis is possible. Among the patients under good control not one had developed advanced retinitis, although some had early retinal hemorrhages and aneurysms. Not one of this group had advanced arteriosclerosis as shown by x-ray. Among the group as a whole one quarter had no retinal hemorrhages whatever at the end of periods varying from ten to thirty years in duration. However, among the two-thirds of the group, or more than 300 patients, who had neglected doctors' care and were under poor control, advanced retinitis with retinitis proliferans was present in many, and moderately advanced retinitis present in one half. Advanced calcification of the arteries was found. Most important of all was the fact that serious diabetic nephropathy or nephritis was present in more than twenty-five per cent of the cases with duration of diabetes exceeding 20 years. Whatever may be the basic and direct causative factors in producing the diabetic complications best illustrated by nephritis, careful control of the diabetes with a diet planned to provide adequate calories in balanced proportions of carbohydrate, protein and fat, sufficient vitamins and minerals, normally utilized by means of a proper dose of insulin, will postpone or prevent retinitis.

International Congress—The XVII International Congress of Ophthalmology will take place at the Waldorf-Astoria Hotel, New York City, the week beginning September 12, 1954. Requests for information should be addressed to William L. Benedict, M.D., Secretary General, 100 1st Avenue Building, Rochester, Minn.

How the Industrial Medical Department Functions in the Vision Program

DANIEL C. BRAUN, M.D.

Medical Director, Industrial Hygiene Foundation
Mellon Institute, Pittsburgh, Pa.

The plant physician should have full knowledge of operating conditions, substances used, visual job requirements and all other factors relating to eye health and protection. Competent evaluation of the workman's visual capabilities is extremely important and parallels the evaluation of the job.*

IN a broad sense sight conservation in industry embraces more than merely protection against accidental injury. It seems entirely proper to consider that protection of the worker's eyes against the effects of disease is just as important as safeguarding them, for example, against flying foreign bodies. The medical department of any industrial organization is certainly doing less than its full duty if it fails to function in both of these areas. And the position of the medical department is unique in this respect; for on the one hand it alone can discover diseases which may be potential causes of blindness, while on the other it can impress upon the employees the necessity for cooperation in safety rules that concern eye protection.

A broad consideration of the risks to which workers in all types of industry are exposed induces a more or less natural classification of the hazards which can lead to complete or partial impairment of vision. These may be listed in the following fashion:

1. Injuries—direct or indirect, including flying objects or foreign bodies.
2. Corrosive or toxic chemicals—by direct contact with the eye, or through their systemic effects upon the body.
3. Radiant energy—infrared, ultraviolet, and nuclear.
4. Fatigue, owing to improper illumination, excessively fine work, refractive errors or excessively long periods of work, or a combination of these factors.
5. Disease—either local, such as glaucoma; or systemic, as diabetes, tuberculosis, arteriosclerosis.

To these five should be added a very important sixth classification, that of *improper*, *inadequate* or *inexpert* treatment of eye injuries, once they are sustained.

In discussing the medical department's part in sight conservation, possibly the best approach is to divide its activities into selection and placement of workers, preventive measures, and treatment. The first two could be combined, since proper placement is surely an effective way of preventing eye accidents, as well as other troubles.

* A paper presented at the Annual Conference of the National Society for the Prevention of Blindness held in Pittsburgh, Pa., March, 1952.

Preventive Measures

I can think of no other situation in which preventive measures are so completely effective, so well perfected, and so easily applied as in the matter of eye safety. Here one can say quite definitely that we have such knowledge, methods and devices that not a single eye need be lost through industrial accidents. The fact that 95,000 eye accidents were reported in industry in 1950 means simply that we have not utilized adequately or properly the knowledge and skills available to us.

When the workman is in the medical department he is psychologically receptive to suggestions that he protect himself with goggles and observe other safety precautions. While he is being treated for a minor injury, he realizes how much more serious it might have been. At such times he is also more receptive to instruction concerning immediate washing of the eyes when caustic or corrosive chemicals accidentally enter them. In other words, the medical department has the opportunity to educate and impress the employee at a time when he is conditioned to take such advice seriously.

The doctor should have full knowledge of all substances used in the plant and of their potential hazards to the eye. This means that he must be advised when any new substance is introduced into the various processes. The purchasing and operating departments must see that he is so advised. He should also familiarize himself with all the other factors inherent in the work which create possible hazards, such as poor illumination, sources of infrared or ultraviolet radiation, or strained, unnatural posture, and he should by all means understand the possible effects of these various environmental conditions upon the eyes. All of which is to say that to do a good job in eye conservation, as in broader aspects of occupational health, the plant physician must know his plant. He must know in detail the physical requirements of each job, including the minimum vision necessary to do that job properly and safely.

Evaluation of Workman and Job

Only by being familiar with the requirements of the job is the physician in a position to place prospective employees properly according to their individual abilities. Competent evaluation of the workman is extremely important and parallels the evaluation of the job. Men should be placed on jobs for which their best vision is adequate, and the medical department should insist that the vision be corrected to the best obtainable. There is, of course, some danger of our being too optimistic in discussing the matching of the person to the job as regards vision. While it is an alluring goal, the fact is that the analysis of various jobs has not progressed to the point where we can state what visual demands a certain job may make, except in a very crude way. Nevertheless, we should make the effort to learn as much as possible about the job and the man, and to match the requirements of the one with the abilities of the other.

Vision Tests

This brings up the question of the difficulty encountered in testing vision. It is generally agreed that the Snellen chart is hopelessly inadequate as a means of evaluating the visual status,

yet a plant medical department cannot hope to have each applicant refracted. Such a practice would be totally uneconomical of both time and money as well as impractical from the standpoint of professional personnel. The alternative is some one of the various testing devices which will give information concerning acuity for near and distance, phorias, and stereopsis.

In the preplacement or periodic examination lies the great opportunity for discovering local or systemic disease which may affect the vision. Such abnormalities as glaucoma, sinus infection, diabetes, and arteriosclerosis should be detected on preplacement examinations, while toxic conditions due to factors of employment may be found if periodic examinations are conducted with proper frequency. The correct interpretation of findings on periodic examinations again requires that the physician be familiar with the exposures and environmental factors of the particular individual's job.

Good Lighting

We talk a good deal about whether the employee works under conditions of "good" or "poor" illumination, and the question arises: "How do we know whether the illumination in any given instance is completely adequate?" To be sure, there are available data which purport to show the number of foot candles of light necessary for various kinds of work, and illuminating engineers have done a great deal of work on this subject. I would like to make the point, however, that there is a real need for research and for cooperative effort among all the sciences concerned —ophthalmology, physics, engineering, and industrial medicine—to arrive at real fundamental facts.

Treatment of Injuries

While we have said, and I think truly, that if we made use of all of the knowledge and protective measures that are available to us, eye injuries need not occur, the fact remains that they still do occur, and in large numbers. Since this is true, the medical department must be prepared to see that proper and complete treatment is received in each case. It is of the utmost importance that no untrained person be permitted to attempt treatment of eye injuries. In a large medical department having several nurses or doctors, one person should be trained to handle all the eye injuries. This person should be thoroughly indoctrinated as to the proper procedure in all types of injury likely to occur in the plant, and should be especially aware of those situations which are beyond his professional skill. They should be sent to an ophthalmologist without delay, and without injudicious attempts at first aid. I cannot overemphasize the value of a consultant ophthalmologist to the industrial medical department. In my own experience, I can think of many instances in which such consultation was of inestimable value and aid. In those instances in which there is but one nurse, or perhaps only a first aid man, to care for all types of injury, it is my conviction that the policy should be definitely established that all eye cases be sent at once to the ophthalmologist. The single exception is in cases of chemical burns. These should be washed on the spot with water, or if possible with normal saline for 15 minutes by the clock, covered, and then sent to the ophthalmologist.

The medical department's records of all eye cases should be mentioned.

Not only are accurate records required for medico-legal purposes when the need arises, but they afford an excellent source of statistical information which may be helpful in preventing future accidents.

Other Contributions

There are many common and obvious things which the medical department routinely does as its contribution to sight conservation in industry. You are all familiar with such techniques as the medical director's column in the house organ, one or more in a series usually being written on some such subject as visual health or care of the eyes. Individual health counseling or talks to groups of employees often are devoted to similar themes. The important consideration is that the industrial medical department and all its personnel be fully aware of the responsibility which they have in the whole area of sight conservation, and of the rare opportunity which is theirs.

What Price Eyesight?

According to newspaper reports, the Massachusetts legislature has passed and Gov. Paul A. Dever signed on May 5, 1952, a bill authorizing the town of Marshfield, Massachusetts, to appropriate and pay a sum of money to Lawrence M. Sinnott on behalf of 17-year-old Jacqueline Sinnott, former high school student who was blinded last year. In a chemistry laboratory experiment in the public school, a test tube blew up in Miss Sinnott's face, resulting in the loss of sight of both her eyes. She is now a student at the Perkins Institution in Watertown. The sum to be paid amounts to $3,500 for hospital and medical expenses plus an annuity of $1,200 yearly. According to her life expectancy of 57 years, the town will thus be obligated to pay an estimated sum of $68,400 in annuity and a total of $71,900 for this tragic laboratory accident.

Some schools and universities require the wearing of shatterproof glasses or eyeshields during chemistry experiments which are potentially dangerous. Had the town of Marshfield provided this protection, a practice which should be generally followed, this needless loss of sight probably would not have occurred.

Role of Public Health Service in Eye Research

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the complex inter-relationships of modern organization than by precise workings of the individual genius of men working alone in their laboratories. On them any research program must depend for its creativity and development.

Our responsibility must be to see that enough men of full capabilities have the opportunity of fighting the blinding eye diseases. There are not enough such men in the field right now. Yet we can get them if we make the funds and facilities available, and we must keep them there by our support.

Pamphlets on Care of Children's Eyes

Two NSPB pamphlets of interest to parents and others concerned with child care are "Eyes for the Future," price 10 cents, and "Crossed Eyes—A Needless Handicap," price 5 cents. They may be secured from the Society at 1790 Broadway, New York 19.

AROUND THE WORLD

World Health Organization

WHO Experts on Trachoma—Control of trachoma, particularly among children, was discussed when the World Health Organization's Expert Committee on Trachoma held its first session in Geneva, March 3–8, 1952. This disease occurs in nearly every country in the world. The experts came from Italy, Egypt, Japan, Portugal, Tunisia, Morocco and the United States. The topics they discussed included: (1) chemotherapy of trachoma; (2) methods of control of trachoma and acute conjunctivitis applicable in under-developed territories; (3) prophylaxis of trachoma in international traffic; and (4) international coordination of scientific research on trachoma.

The experts agreed that trachoma is curable and should be considered in general only mildly contagious except in young children. Aureomycin and terramycin were found to be the most effective drugs for treatment of the disease. The committee outlined a model control plan for attacking the disease in under-developed areas. Prevention of its spread in international travel must be based on the fact that it is only mildly contagious, the experts emphasized. For world traffic, a distinction must be made between travelers in transit and immigrants. Chronic trachoma cases can be accepted in transit travelers without quarantine restrictions, but those with acute forms should be treated until they become noncontagious before embarking for international travel. Medical examination of prospective migrants should be done twice at two-month intervals. The first examination would find and treat trachoma cases. When cured, the patient would receive a medical certificate to present at the second examination. To facilitate interpretation of medical certificates, the committee proposed universal adoption of specific trachoma nomenclature that would supersede all other classifications.

Since 1950, WHO has been carrying out a mass experiment in trachoma control among Arab refugees in the Middle East and sponsoring an experiment in Morocco with the use of terramycin in trachoma therapy. Also, several campaigns are being planned in various countries with the assistance of other specialized agencies.

Canada

CNIB Prevention Program—The Canadian National Institute for the Blind in Toronto believes prevention of blindness is no less important than the welfare of the blind. This is evidenced by its prevention register of more than 44,000 cases, of which about 2,900 received some form of service in the year ended March 31, 1951. CNIB's help to those whose

sight is threatened includes skilled treatment in city hospital or clinic, provision of spectacles, circulation of leaflets and films, and collection of statistics on causes of eye disorders. In 1951 the head of the Institute's prevention of blindness department, Miss Isabel Thomas, traveled with an ophthalmologist and optometrist into the Arctic circle, and for several weeks examined and treated Eskimos. The Institute's records now include the happy photograph of Eskimo Mrs. Kowtak proudly wearing spectacles and contentedly smoking a large cigar.

Denmark

Centenary of Famed Ophthalmologist—The Danish ophthalmologist Professor J. Bjerrum was born December 26, 1851, and died July 2, 1920, after a distinguished career marked both outside and inside Denmark by significant contributions to the library of ophthalmological textbooks. Celebrations of his centenary include a survey of his career by Dr. Holger Ehlers. From 1876, after qualifying as a physician, Bjerrum worked in an eye hospital in Havnegade, where he undertook painstaking research into perception of light and form, a subject of his doctoral thesis. Besides his two books on examination of the eyes and use of the ophthalmoscope, he published a long series of reports on glaucoma and photophobia. Dr. Ehlers asserts that Bjerrum's main claim to fame rests on his investigations in the field of vision. His observation of small field defects associated with glaucoma was first greeted with much skepticism abroad, but its clinical importance in diagnosis of glaucoma is now well recognized by his former critics in many parts of the world.

England

Shortage of Donor Corneas—According to Sir Cecil Wakeley, President of the Royal College of Surgeons of England, the shortage of donor graft supplies is the main obstacle to the expansion of corneal graft surgery in that country. In a letter to *The Times* of March 8, he said, "British surgeons are compelled to obtain their grafts from the small source of eyes which have to be removed for disease, whereas it is acknowledged that the best graft comes from the eye of an aged person who has died a natural death." He favors a proposed alteration in the law now before Parliament which, he contends, would make it possible to obtain sufficient eyes on a voluntary basis.

Treacher Collins Prize Essay—The Council of the Ophthalmological Society of the United Kingdom has instituted a prize of £100, awarded triennially, for the best essay submitted on a subject selected by the Council. This Treacher Collins Prize is open to qualified medical practitioners of any nationality; the essay is to be written in the English language.

The subject for the next award of the prize is "The Eye in General Vascular Disease." The closing date for sending in essays for the award is December 31, 1953. They should be submitted to the Honorary Secretary of the Ophthalmological Society, 45 Lincoln's Inn Fields, London, W.C.2.

Scotland

Tonometer Checking Station—The first tonometer checking station in the

United Kingdom was established in Glasgow early this year by C. R. S. Jackson, F.R.C.S., a staff member of the Glasgow Eye Infirmary. Dr. Jackson was asked to undertake this project by the W. H. Ross Foundation in Scotland, an organization for the study of prevention of blindness. Dr. Jackson plans to adopt standards in Scotland similar to those used in the United States by the Committee on Standardization of Tonometers of the American Academy of Ophthalmology and Otolaryngology.

Condemn "Night Driving Lens"

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renders the task of seeing at night more difficult. Similarly, it condemns the use of colored windshields (which may prove a hazard at night) or the promotion of removable filtering or polarizing shields as a useful aid in night driving.

"As applied to the general civilian population, this Sub-Committee endorses the thesis that sunglasses should be worn only when the intensity of light produces discomfort, and that the penalty for their wear otherwise is the reduction of the individual's tolerance to bright light. Unless indicated by definite ocular pathologic processes, the habitual use of sunglasses indoors is most objectionable.

"It is emphasized that no commercially marketed sunglass is sufficiently dense to permit direct gaze at the sun. Much denser filters are required for a safe view of a solar eclipse.

"With respect to the mildly tinted lenses designed for constant wear, it is recognized that the more densely tinted lenses of this group are useful in the presence of photophobia due to pathologic conditions. In the absence of pathology those denser tints should not be prescribed for constant wear. The total light transmission of the lighter tints differs so little from that of crown glass that they are not considered effective filters in pathologic states. The Sub-Committee has no objection to the use of the very mildly tinted lenses if the patient desires them and can afford the additional cost. It is emphasized, however, that we do not agree that they offer physiologic advantage over crown glass for use under fluorescent lighting or other lighting situations.

"The Sub-Committee is aware of the investigations which have shown that prolonged exposure to bright sunlight impairs night vision subsequently. This factor is of extreme importance in certain military situations but of very questionable importance in civilian life. The motorist viewing the road ahead under headlights is dependent upon photopic vision; and we are not convinced that photopic vision is appreciably improved by the use of sunglasses. Rather, we believe that the inadvertent use of sunglasses at dusk constitutes a far greater hazard in driving on the highways than any possible decrement in vision at low levels of illumination.

"The Sub-Committee agrees in general with the statements contained in the article by Dean Farnsworth, 'Standards for Sunglasses,' published in THE SIGHT-SAVING REVIEW, 20: 81–87 (Summer) 1950."

Eye Facts—In the United States about $1,500,000 is spent yearly on prevention and research to save sight. At the same time about $8,000,000 is spent for eye cosmetics and eye lotions!

NOTES AND COMMENT

Report from Kansas

A series of eight eye health institutes were held in Kansas during March, reports Miss Marguerite Blase, medical social work consultant, Division of Services for the Blind. Speaker and consultant at all the meetings was Miss Helen E. Weaver, R.N., M.P.H., the National Society's consultant in nursing activities. Miss Weaver's topics were: "The Nurses' Responsibility in Conserving Vision"; "Eye Health—A Cooperative Community Program"; "Sight Conservation in the Schools"; and "The Teachers' Responsibility for Eye Health in the Classroom."

Attending the institutes were public health nurses, teachers, students at teachers' colleges and nurses in training at Kansas City, Salina and Wichita. The Division of Services for the Blind, the Kansas State Board of Health's Public Health Nursing Division and the Division of Special Education of the Kansas State Board of Education arranged the institutes, which were sponsored locally by four Kansas teachers' colleges, the Nurses League and local county health departments. All the meetings emphasized what teachers and school nurses can do to promote an adequate eye health program.

The Kansas Medical Society's Conservation of Eyesight Committee has endorsed the drivers' education program sponsored by the Council of Drivers' Safety Education for Kansas, and has recommended: a change in the law requiring restricted licenses for persons declared industrially blind; staggering of drivers' license renewals; and use of larger numbers on car license plates.

The committee has also gone on record as opposing use and sale of firecrackers and air rifles. Support has been solicited from the Kansas State Parent-Teacher Association in this endeavor.

School Lighting Standards

At a New York State Board of Regents meeting early this year revised standards were adopted for lighting in public school buildings. As reported in the April, 1952 issue of The University of the State of New York *Bulletin to the Schools*, the new standards include a reduction of minimum height of classroom ceilings from 11 to 9 feet; and provision that the chief source of light in the schoolroom may be either natural or artificial illumination. The latter is in contrast to the old standards which relied upon natural light as the chief source. This change takes advantage of the latest techniques in lighting and building design which save space and make classrooms better serve educational purposes.

The new regulations are the result of recommendations of the New York State School Building Commission, which appointed a select group of physicians, lighting engineers, archi-

tects, engineers and parents to study the matter. Interpretation of the new regulations is being sent by the Division of School Buildings and Grounds of the Education Department to school superintendents and architects in the state.

Contact Lens Tests

Tests are being conducted at the Army medical research laboratory, Fort Knox, Kentucky, to find out to what extent a combat soldier who needs glasses would benefit from wearing contact lenses.

Georgia Studies Accidents

The Georgia State Committee of the National Society is sponsoring a survey which began in May to determine the causes of eye accidents among preschool and school children throughout Floyd County, which includes the city of Rome. Tom Harbin, M.D., is chairman of the project committee and working with him are Jack Runninger, O.D., and Mrs. Andrew A. Cooper. The Floyd County Parent Teacher Council has endorsed this project and its members are serving as volunteers to obtain the necessary information. Floyd County has 33 colored and white schools with about 10,500 school children. The survey will continue through June and July which are vacation months for the children.

Similar projects are being planned in Missouri and Indiana. Mrs. Ruby M. Hopkins, field service consultant of the National Society, has recently visited all three states and reports that Missouri will conduct its survey during the months of September, October and November of this year. Indiana's survey will start in December.

VD Rate Cut

The venereal disease rate in the United States has been cut almost in half since 1947, according to the U. S. Public Health Service. In the fiscal year 1951 syphilis occurred at the rate of 132 per 100,000 population. The rate in 1947 was 261 per 100,000. This decrease has occurred in all but one state—Iowa. The trend in gonorrhea also has been downward. Relatively, however, gonorrhea has decreased much more slowly. Reported gonorrhea rates in the fiscal year 1951 represent a decrease of 36 per cent as compared with 1947, while early syphilis rates decreased by 69 per cent. In 1951, there were 179.2 cases of gonorrhea reported per 100,000 civilians.

Encouraging as this decrease is and although the number of children losing their sight because of VD has been cut by 54 per cent since 1936, VD remains an important cause of blindness among children. Studies made by the National Society for the Prevention of Blindness reveal that 10 per cent of the children entering schools for the blind today lost their sight because of venereal infections, while in 1936, 21 per cent were VD cases.

Interprofessional Cooperation

During observance of "Save Your Vision Week" in March a student and faculty assembly of the Northern Illinois College of Optometry heard a talk by Mrs. Dorothy Gray, executive secretary of the Illinois Society for the Prevention of Blindness, who emphasized the importance of optometry in preventive visual care. Mrs. Gray cited the work being done in school vision in the state of Illinois, and pointed out that there are 29 county

joint committees of medical and optometric representation serving 59 counties. The responsibility of these joint committees is to decide professional and technical matters including the important problem of referrals.

New Treatment in Tuberculosis

At the Joint Meeting of the Tuberculosis Sanatorium Conference of Metropolitan New York and the New York Trudeau Society on March 5 last, Dr. Walsh McDermott of Cornell University Medical College made the following comment regarding the use of the new drug, isonicotinic acid hydrazide, in treatment of tuberculosis:

". . . from Dr. Robitzek's and Dr. Selikoff's experience at Sea View Hospital, and from my own experience at New York Hospital with miliary tuberculosis, there is every reason to believe that this drug has a very strong anti-tuberculous activity in humans during a short but as yet undefined period of time. In other words, the drug has a high degree of anti-tuberculous activity.

"There's no question about that. But the big question is the one to which no one has the answer as yet—whether this admittedly high degree of anti-tuberculous activity is something which is going to be present only for a matter of 60 days, or 90 days, or 120 days, or something of that order. Or whether it is actually something which to an individual patient means that, at any time in his tuberculous lifetime, he can obtain anti-tuberculous activity from this drug. That point simply is not known. Neither study, even the much older Sea View study, has been going long enough for the absence of relapse to mean anything in pulmonary tuberculosis."

Dr. Greenburg Honored

Dr. Leonard Greenburg, since 1935 the director of the Division of Industrial Hygiene and Safety Standards of the New York State Department of Labor, was recently cited as the 1952 recipient of the Donald E. Cummings Award. This is the highest honor conferred by the American Industrial Hygiene Association.

Dr. Greenburg was honored because of his "great work in the medical, engineering and administrative aspects of industrial hygiene" and because he had "welded the activities of his division together to establish a professional technical service that had been of very great benefit to the industries of New York State and their employees, and for which these industries have the utmost respect."

For many years Dr. Greenburg has been active in the work of the National Society for the Prevention of Blindness; at present he is a member of its Executive Committee and chairman of its Industrial Advisory Committee. He has rendered distinguished service both in the organization's general program and on specific problems of industrial eye health and safety.

Growth of Wise Owl Club

Chapters of the Wise Owl Club, sponsored nationally by NSPB, have now been organized in 547 plants. Members of the club, men and women who have escaped eye injury because they wore goggles when accidents occurred, number 3,025. Among this group 3,749 eyes have been saved. Information on organizing a Wise Owl chapter may be obtained from NSPB, 1790 Broadway, New York 19.

CURRENT ARTICLES

Prevention of Ophthalmia Neonatorum, L. M. Schuman, *Illinois Health Messenger*, October 15, 1951, Vol. 23, No. 20, p. 77.

Although penicillin may be effective as a prophylaxis against ophthalmia neonatorum, the Illinois Department of Public Health has not seen fit to accept it in the prevention of this disease because: (1) penicillin solutions are unstable, require refrigeration and fresh preparation each week; (2) penicillin prophylaxis requires multiple instillations; and (3) penicillin is prone to sensitize patients to subsequent use especially when administered by the cutaneous and ophthalmic routes. Accordingly, the Illinois Department of Public Health will continue to accept 1 per cent silver nitrate solution as the only approved drug for prophylaxis against ophthalmia neonatorum.

High Myopes in Industry, H. S. Kuhn, *Industrial Medicine and Surgery*, October, 1951, Vol. 20, No. 10, p. 483.

Dr. Kuhn says that the present trend toward hiring older employees involves not only the problem of their general physical condition but also their incidence of special eye conditions—glaucoma, retinal disease, cataracts. In addition to these the very high myopes are swelling the ranks of workers in heavy industry. In heavy lifting or sudden bumping of the head, these persons can suffer detachment of the retina. Frequently a detachment means total loss of vision in the affected eye. Dr. Kuhn recommends to all who examine applicants that they avoid placing the high myopes on jobs where heavy lifting or excessive stooping is necessary, or where there is danger of head bumps. This does not mean that such an individual should not be employed, only that he be kept from work that might cause a detachment.

Streptomycin in Ophthalmology, A. Sorsby, J. Ungar and N. L. Bailey, *British Medical Journal*, January 19, 1952, No. 4750, pp. 119–123.

In summary, the authors state that streptomycin, 0.5 g. in 1 ml. of water, is well tolerated on subconjunctival injection. Such doses give considerably higher intraocular levels when injected subconjunctivally rather than intramuscularly. Intraocular levels are even higher and persist up to 36 hours if adrenaline 1:1,000 is the solvent. For clinical purposes streptomycin to be injected subconjunctivally should be dissolved in 10 min. (0.6 ml.) of water to which 5 min. (0.3 ml.) of adrenaline 1:1,000 is freshly added. Clinically, streptomycin is effective when used subconjunctivally in infections of the cornea due to Gram-negative bacilli. As these lesions are highly destructive, early treatment is essential, and the characteristic clini-

cal appearance of such infections facilitates early diagnosis. Streptomycin locally is also invaluable in acute conjunctivitis due to Gram-negative bacilli. Systemic streptomycin therapy has proved helpful in tuberculous keratitis. It has given poor results in presumably tuberculous iridocyclitis and in periphlebitis. In phlyctenular ophthalmia it tends to cut short severe attacks, and probably reduces the frequency and severity of relapses.

ACTH and Cortisone in the Treatment of Ocular Disease, R. W. Smith, Jr., and E. H. Steffensen, *The New England Journal of Medicine*, December 27, 1951, Vol. 245, No. 26, pp. 1007–1013.

The greatest benefits of ACTH and cortisone are their use in early, nonspecific inflammatory lesions of the eye. However, they do not lessen the need both for their appropriate use and the proper diagnosis of ocular disease. The authors review current theories of pathogenesis of acute nonspecific inflammatory diseases of the eye, and present the physiologic basis for the use of ACTH and cortisone. Attention is given to currently accepted therapeutic programs and the limitations that may be encountered.

ACTH and Cortisone in Ocular Disease, G. R. Nachod, *Journal of the American Medical Women's Association*, December, 1951, Vol. 6, No. 12, pp. 453–455.

Summarizing existing data on the ophthalmologic use of ACTH and cortisone, the author says these substances have been used successfully in treating allergic conditions of the lids and external eye, and inflammations of the cornea, sclera and uveal tracts. They do not alter the underlying infection and, therefore, every effort should be made to discover the etiology of the infection.

ACTH and Cortisone Therapy in Eye Disease, H. L. Ormsby, S. Y. Shirley, J. F. Aikenhead, and R. G. Murray, *The Canadian Medical Association Journal*, January, 1952, Vol. 66, No. 1, pp. 62–66.

Based on the study of 176 cases of inflammatory eye disease treated with ACTH and cortisone, the authors say these hormones are effective in uveitis, keratitis and allergic conjunctivitis. Bacterial pathogens in corneal ulcers, endophthalmitis, conjunctivitis or blepharitis must be controlled by other measures since there is evidence that tissue defenses are inhibited by these hormones. Care should be taken in dealing with viral pathogens since there is evidence suggesting that use of cortisone may prolong the acute inflammatory phase and delay healing. Topical cortisone is indicated in disorders involving the anterior segment of the eye. ACTH or cortisone parenterally, or cortisone orally is indicated where the posterior segment is involved. A combination is used occasionally in the more acute or resistant cases.

Prevention in the Control of Glaucoma, H. Pichette and J. Audet, *The Canadian Medical Association Journal*, January, 1952, Vol. 66, No. 1, pp. 48–51.

Stressing early detection of the preglaucoma condition and early treatment, the authors recommend organi-

zation of glaucoma clinics as the best means of meeting the needs of these patients who require repeated and careful examinations. Such a clinic has been in operation at St. Sacrement Hospital, Quebec, since April, 1950. By February, 1951, 111 patients had come for consultation, involving 809 examinations. Of these patients, 103 were recognized as being pre-glaucoma or glaucoma cases.

Importance of Atmospheric Oxygen for Maintenance of the Optical Properties of the Human Cornea, G. K. Smelser and V. Ozanics, *Science*, February 8, 1952, Vol. 115, No. 2980, p. 140.

As a result of tests of four subjects, who were fitted with diving goggles in which the eyes could be exposed to various gas mixtures, the authors believe that the corneal haze and halos noted when contact lenses are worn are caused by hydration of the cornea, and that contact lenses interfere with the mechanism which maintains the cornea in its normal state of detergescence. This mechanism may in part depend on the osmotic relations between the cornea and tears, but it is suggested that metabolic processes also are involved in the removal of water from the cornea.

The subjects' eyes were exposed for four hours to each of the following gases: (1) air, (2) air 85 per cent and CO_2 15 per cent, (3) N_2, (4) N_2 85 per cent and CO_2 15 per cent, all saturated with water vapor, and (5) relatively dry N_2. At intervals the subjects looked at a bright light source in a darkened room to discover whether halos, similar to those caused by contact lenses, had developed. All had worn contact lenses and were familiar with such halos. No halos were produced by exposing the cornea to moist air or air-CO_2 mixtures for four hours, but bright halos developed in less than 2–3 hours in all four subjects when nitrogen was used.

This suggests that contact lens halos are caused by oxygen deficiency under the lens. Introduction of oxygen bubbles under the lens prevented appearance of halos in experiments lasting seven hours. During an experiment the bubbles became reduced in size, indicating that the cornea utilized the oxygen.

Marriage of Two Complete Albinos With Normally Pigmented Offspring, P. D. Trevor-Roper, *British Journal of Ophthalmology*, February, 1952, Vol. XXXVI, No. 2, pp. 107–108.

Reports the case of Mr. and Mrs. I., both albinos, who met at a school for the partially sighted, married, and had three children with normal pigmentation and dark irides. There are no known albinoid relations. The author states that albinism is a hereditary defect in melanin anabolism whose simple recessive inheritance appears to be undisputed, so that defective children could be anticipated when two albinos marry. He believes that such violation of Mendelian principles on three occasions as seen in this case deserves comment.

Conjunctivitis in Elementary Schools, D. J. Davis and V. D. Hines, *Public Health Reports*, February, 1952, Vol. 67, No. 2, pp. 145–149.

Conjunctivitis as a cause of absenteeism and disability was studied in

six white and six negro elementary schools of Thomas County, Georgia, from October, 1949 to December, 1950. Highest incidence of the disease occurred in September and October, when about 15 per cent of absences were due to conjunctivitis. In grades 1 to 6 of the 12 schools surveyed during the school year 1950, a total of 806 pupil-days of absence was due to conjunctivitis, and 2,709 pupil-days of conjunctival disease were observed in children attending school.

An Evaluation of the Massachusetts Vision Test for Visual Screening of School Children, E. R. Yasuna and L. S. Green, *American Journal of Ophthalmology*, February, 1952, Vol. 35, No. 2, pp. 235–240.

The use of the Massachusetts vision test was studied in the schools of Shrewsbury, Massachusetts during the year 1949–1950. The entire school population of 1,575 students formed the experimental group. Results led the authors to recommend that no testing be done on the 20/20 line in Part I (Snellen) in the age group six to eight years, since too high a referral rate would result. Instead, the inability to read correctly four of the six symbols on the 20/30 line should be used as the basis of failure. They also recommended that the plus sphere employed in the age group six to eight years be increased from +1.75D. sph. to +2.25D. sph., and that phoria testing with the Maddox rod be eliminated. All failures should be rechecked by an independent examiner before referrals are made. These authors found the Massachusetts vision test to be practical and valuable in mass screening for visual impairment in school children.

Incidence of Clinically Significant Aniseikonia, R. E. Bannon, *The Journal of the New York State Optometric Association*, February, 1952, Vol. 18, No. 12, p. 2.

To ascertain the incidence of clinically significant aniseikonia, the Dartmouth Eye Institute records of the citizens of Hanover, N. H. were studied for a 15-year period. Clinically significant aniseikonia is defined in this study as aniseikonia of 0.75 per cent or more associated with symptoms related to the use of the eyes and not relieved by accurate refractive or motility corrections. Results of the study were: (1) per cent of population examined for aniseikonia—10; (2) per cent of population given iseikonia corrections—4; (3) estimated per cent of population benefiting from iseikonic corrections—3.

Edema of the Optic Disks in Cases of Encephalitis, H. P. Wagener, *The American Journal of the Medical Sciences*, February, 1952, Vol. 223, No. 2, pp. 205–215.

The author comments that although reports in the literature indicate that choking of the optic disks can develop in encephalitis, yet in the presence of true choked disks, the diagnosis of encephalitis must be made with caution. Since differential diagnosis between choked disks and optic neuritis cannot be made by ophthalmoscopic examination alone, and since in many patients with encephalitis age or illness precludes satisfactory studies of vision, it seems logical to assume that any edema of the disk in a patient with encephalitis should be considered optic neuritis until such a diagnosis can be definitely disproved. The author

stresses the importance of adequate estimations of vision in patients with edema of the optic disks so that correct diagnosis can be made. Differentiation between choked disks and optic neuritis may be very important in evaluating the nature and course of the systemic disease. It is essential for the prognosis of future vision.

Symptomatology of Congestive and Simple Glaucoma, A Study in Contrast, S. J. H. Miller, *British Medical Journal*, March 1, 1952, No. 4756, pp. 456–461.

The author analyzed 180 case histories of patients with glaucoma and arrived at the following conclusions: (1) congestive glaucoma has an acute onset, simple glaucoma an insidious onset; (2) intraocular tension in congestive glaucoma is episodic, in simple glaucoma it tends to be constant; (3) cupping of the optic disk is not characteristic of early congestive glaucoma, but is in simple glaucoma; (4) changes in the visual fields are not found in early congestive glaucoma, but are in the simple type; (5) threat to vision is less in congestive than in simple glaucoma; (6) congestive glaucoma is diagnosed at an earlier age than is simple glaucoma and is commoner in the female sex; (7) distribution of the two types of glaucoma over the refraction range is very similar; (8) tendency toward nervousness is more marked in patients with congestive glaucoma than in those with simple glaucoma; and (9) a plea is made that doctors should suspect glaucoma in all patients over 40 years with eye symptoms, especially if halos have been seen or there is unilateral disturbance.

No Excuse for Eye Accidents, H. Sager, *Safety, Maintenance & Production*, March, 1952, Vol. 103, No. 3, p. 36.

At Sperry Gyroscope Company in 1943, during a nine-month period, a total of six eyes were lost and 56 serious eye injuries were reported, many resulting in partial loss of sight. This entailed an expenditure of over $200,000 in direct and indirect costs and a loss of 700 work days. Since establishment of an eye safety program in 1944 not one eye has been lost in the machine shops and foundry and not one serious eye injury has occurred resulting in the partial loss of sight. During seven years of the program, 72 pairs of smashed safety glasses have been collected, all of which might have resulted in potential eye loss. More than 18,000 employees have been refracted by the optometrist, and 25,000 vision screening tests have been performed by the vision technician and analyzed by the optometrist. As a result approximately 40 per cent required new prescriptions. For protection, 25,000 pairs of safety glasses have been dispensed. The eye safety program at Sperry is based on cooperation of plant management, medical department, optometrist, safety engineer, maintenance department, foremen and employees.

Some External Ocular Signs Associated with Constitutional Disease, E. B. Dunphy, *Southern Medical Journal*, March, 1952, Vol. 45, No. 3, pp. 202–208.

The author cites constitutional diseases which produce external eye disorders. He indicates that probably none has so many external ocular

signs as Graves's disease (exophthalmic goiter). These vary from early lid signs to progressive exophthalmos with corneal ulceration and loss of the eyeballs. Another systemic disease, myasthenia gravis, causes ptosis, usually the first sign. In this disease the ocular signs are limited entirely to the external eye and are the earliest and the most frequent. Ophthalmologists consider sarcoidosis an important constitutional disease, since most of the ocular tissues may be affected. Multiple sclerosis, a disease of the central nervous system, produces nystagmus in about 70 per cent of cases. In syphilis, the conjunctivae may be the seat of a primary chancre. The author states that primary tuberculosis of the cornea and conjunctiva is very rare, and that the interstitial keratitis of tuberculosis is more commonly seen. In trichinosis, the parasites seem to have an affinity for muscle tissue, often invading extraocular muscles and causing puffy lids and ocular tenderness. Other ocular disturbances discussed include band keratopathy (band-shaped opacity of the cornea) and those resulting from abnormal fat metabolism and various vitamin deficiencies.

The Effect of Cortisone and ACTH on Ocular Inflammation Secondary to the Injection of Irritant Substances, A. C. Woods and R. M. Wood, *Bulletin of the Johns Hopkins Hospital*, February, 1952, Vol. 90, No. 2, pp. 134–148.

The authors observed the blocking effect of ACTH and cortisone on inflammation produced by the irritants, jequirity infusion and staphylococcus toxin. They found that both cortisone and porcine ACTH given parenterally 3 days prior to ocular injection and 1 day thereafter, effectively block inflammatory reaction in the eye produced by the injection of weak jequirity infusion and 1:50 and 1:100 dilution of staphylococcus toxin. Parenteral injection of the preparation of beef ACTH used in this experiment was relatively ineffective in blocking the inflammation which follows the injection of either jequirity infusion or staphylococcus toxin in the anterior chamber of the rabbit's eye. Cortisone injected in the anterior chamber synchronous with the injection of these irritants has local blocking action on the inflammatory response. Neither beef nor porcine ACTH has any such action applied topically.

A Report on Visual Handicaps of Partially Seeing Children, C. E. Kerby, *Journal Exceptional Children*, February, 1952, Vol. 18, No. 5, pp. 137–142.

An analysis of data supplied by supervisors and teachers of 7,310 partially seeing school children indicated that their visual handicaps were in most cases due to defects in development. Refractive errors, chiefly myopia, accounted for almost half (49 per cent) of the total. Congenital defects, such as cataract, albinism, retinitis pigmentosa, and buphthalmos, came next, with 22 per cent, then defects of muscle function (nystagmus 9 per cent and strabismus 9 per cent). There were remarkably few cases attributed to either infectious diseases or accidents.

The study also showed an especially large percentage of children falling outside the expected range of vision. Whereas partial vision is usually de-

fined as between 20/70 and 20/200 visual acuity, 8 per cent of the group have less than 20/200 vision, while 40 per cent have more than 20/70, 24 per cent even better than 20/50. While admitting that this classification by degree of vision in the better eye does not give sufficient weight to the nature of the visual handicap in individuals, the author suggests that class lists should be reviewed to insure use of available facilities by children whose need is greatest.

Contamination of Eye Solutions, F. H. Theodore, *American Journal of Ophthalmology*, December, 1951, Vol. 34, No. 2, p. 1764.

Calls attention to the hazards of contaminated eye solutions, an ever-recurring danger resulting from the not generally known fact that no specific governmental regulations exist concerning the sterility of eye medicaments. Pharmaceutical companies making commercial ophthalmic preparations are not required by law to use techniques insuring sterility. Within recent months eyedrops were withdrawn on two occasions because of contamination with an organism which is apt to produce one of the most virulent types of corneal ulcer encountered. The author urges passage of a law in the public interest assuring users of commercial ophthalmic preparations that the products are sterile and will produce no eye infections.

How We Learn To See, G. A. Brecher, *Today's Health*, January, 1952, Vol. 30, No. 1, p. 24.

The first step in learning to see is fixation of objects in the line of view. Newborn babies usually accomplish this within five weeks. Only when an object is looked at directly and followed by the eyes does it form a clear image on the light-sensitive layer of the eye background, the retina. The sense of touch helps a baby to connect what he sees with its image on the retina. It takes him about six months to acquire this power of orientation. About the same time he begins to coordinate the movement of both eyes more precisely. This is necessary for proper binocular vision, the art of seeing with both eyes. Utmost precision in eye coordination is imperative to project optical images of objects on exactly corresponding places of the eye backgrounds. Only if the position of both eyes is properly adjusted do we become capable of perceiving depth and distance accurately. It takes children about six years to master binocular vision and depth perception. Single vision is possible only when the position of both eyes is coordinated by reflex. The reflex which brings this coordination is called the fusion reflex. Some things that can be done to facilitate the visual learning process are good illumination, ample opportunity for relaxing distant vision, plenty of outdoor life, and sensible moderation in exposing children to television.

Standardization of Reading Types, F. W. Law, *British Journal of Ophthalmology*, December, 1951, Vol. XXXV, No. 12, pp. 765–773.

For the purpose of standardizing reading types for testing near vision, the author suggests to the Council of the Faculty: (1) that "Times Roman" type face be adopted; (2) that the spacing shall be "standard"; (3) that

specimens of printing of sizes 5 pt., 6 pt., 8 pt., 10 pt., 12 pt., 14 pt., 18 pt., 24 pt., 36 pt., and 48 pt. be used; and (4) that near acuity be recorded by the letter S (standard) followed by the number indicating type face size, e.g., S5, S8, etc. He recommends also that the types be printed upon dead-white matt-surface cartridge paper or cartridge boards, which may, if desired, be varnished after printing to increase durability, and that the actual printed types be available for purchase at cost price from the Faculty offices.

Visual Performance and Fatigue Under Conditions of Varied Illumination, J. Brozek and E. Simonson, *The American Journal of Ophthalmology*, January, 1952, Vol. 35, No. 1, pp. 33–46.

The authors, working in the Laboratory of Physiological Hygiene, University of Minnesota, used as subjects six healthy young men in their twenties with normal vision.

In the average performance score there was striking improvement when the illumination level was raised from two to five footcandles, the improvement representing one half the total range between the best and worst score. There was further marked improvement at 15 and 50 footcandles. The optimum was reached at 100 footcandles but the differences between the scores at 100 and either 50 or 300 footcandles were small.

The values for the performance decrement at the six levels of illumination paralleled, in the gross outline, the pattern of the average performance. It showed a more marked optimum at 100 footcandles. The average blinking rate showed also an optimum at 100 footcandles. The authors believe that further research is required on the spectral quality of light.

The Lability Test and Gonioscopy in the Diagnosis of Glaucoma, M. G. Ross, *The American Journal of Ophthalmology*, January, 1952, Vol. 35, No. 1, pp. 25–32.

The lability test was found reliable in selecting six eyes with wide-angle glaucoma, previously undiagnosed and unsuspected, from among 400 normal eyes. Gonioscopy added information and clarified the diagnosis in two cases. Excessively narrow chamber angles were found in 12 per cent of normal eyes of persons over 50, none of whose eyes gave an abnormal response to the lability test. No true false-positive response to the lability test was found after patients' involuntary straining movements were eliminated and correction had been made for variation among even certified tonometers. Heavy pigment deposition occurred in only seven per cent of the chamber angles of nonglaucomatous eyes of persons over 50. No correlation was found between iris color and amount of pigment granule deposition in the chamber angle.

Clinical and Autopsy Findings in Early Retrolental Fibroplasia, Report of a Case, G. S. Tyner and W. C. Frayer, *A.M.A. Archives of Ophthalmology*, December, 1951, Vol. 46, No. 6, pp. 647–654.

Principal pathologic changes seen in microscopic examination of the eyes were: (1) a heavily vascularized fibrous membrane, arising from the inner layers of the retina and pulling a retinal fold forward from the region of the ora

serrata toward the central portion of the globe; (2) small vascular buds arising from the vessels in the nerve fiber layer of the retina and extending into the vitreous; (3) formation of retinal folds, arising from the surface of the retina near the optic papilla and joined by fibrovascular bands to a larger retinal fold in the periphery of the retina, which extended outward toward the central portion of the globe; (4) presence of edema fluid and small areas of proliferation of pigment epithelium of the retina; and (5) excessive small, blood-filled vascular channels in the iris and ciliary body.

Causes of Blindness Among Recipients of Blind Assistance, R. H. Hurst, *Public Welfare in Indiana*, January, 1952, Vol. LXII, No. 1, pp. 3–14.

In this report data on causes of blindness among adults, based on the Blind Assistance caseload as of December, 1950, are compared with findings of similar studies made in June, 1938, and December, 1940, to show trends.

The most significant change noted is a decrease of 23 per cent in the caseload between 1940 and 1950. This is attributed both to improved prevention procedures resulting in fewer applicants, and the department's corrective eye treatment program resulting in removal from the register of 333 persons (11.5 per cent of the total cases closed) whose vision had been partially or wholly restored. The cases due to general diseases and those due to injuries showed the greatest decrease. Infectious diseases decreased in the same proportion as the entire caseload but remained the leading known cause in 1950, as in 1938 and 1940. The number of recipients whose blindness was of prenatal origin remained the same so that this group replaced injuries as the second most important cause.

Trachoma has decreased in the same proportion as the total caseload and the "trachoma area" in Southern Indiana is contracting, but it continues to be the largest single etiological factor (9.6 per cent of the total). Only 3 negroes were so affected. Syphilis also decreased, but remains high for negroes who accounted for 40 per cent of the cases due to syphilis, although they constitute only 11.5 per cent of the total recipients.

The most important topographical causes in 1950 were cataract (17.1 per cent), optic nerve atrophy (14 per cent), glaucoma (13.5 per cent), ulcerative keratitis (9.1 per cent) and retinal degeneration (7.3 per cent). It is of interest to note that the number of glaucoma cases has decreased only slightly. The number of cataract cases has apparently decreased markedly, but this may be explained in part by a fact mentioned in discussion of the increase in affections of the choroid and retina. It is that ophthalmologists are now better able to detect retinal changes. If associated with the cataract, these would probably be considered of primary significance.

As has been found in previous studies, the blindness rate for males exceeds that for females. The rate for negroes exceeds that for whites. During the ten-year period the trends were accentuated, with the proportion of blindness decreasing among the white population and increasing among negroes.

BOOKS AND PAMPHLETS

CHRONOLOGY OF OPHTHALMIC DEVELOPMENT. Arthur H. Keeney, M.D. Charles C. Thomas, Springfield, Illinois, 1951. 22 p. $2.00.

This pamphlet contains a concise and comprehensive listing of established data on the development of the human eye. It is intended to serve as an easy reference in conjunction with textbooks on the development of the eye. The text covers development of vision and binocularity from the third fetal month to the ninth year of life. It contains three tables showing development of the human eye which makes possible a correlation between the development of various parts of the eye at any given time.

A MANUAL OF ORTHOPTICS. Julia E. Lancaster. Charles C. Thomas, Springfield, Illinois. 1951. 200 p. $5.50.

Over 100 years ago British and French oculists were experimenting with non-surgical treatment of strabismus. Gradually, useful instruments were developed to aid in orthoptic treatment. Visual training is necessarily repetitive and the busy eye physician usually cannot take the time required to bring about results in his patients. To fill this need, Miss Lancaster points out, the instrument manufacturers in the United States offered free courses to would-be technicians in the use of their instruments, some of which had no scientific validity. This unfortunate development, combined with the exploitation of visual training by charlatans, reflected most unfavorably on the work of the ethical and well-trained orthoptists. Since the establishment of the Royal Westminster School of Orthoptics in London in 1932 and the American Orthoptic Council in 1938, some order and clarity have been achieved in this dynamic field.

Inasmuch as the practice of orthoptics is based largely on sound educational principles, it is most helpful to our understanding to have this book by a skilled orthoptist who has a broad background in the psychology of education.

"Vision is one of the senses most difficult to learn. Most of the senses, such as taste, smell and touch are learned at a low level and take no special skill. Even hearing, which is most like vision (because it involves two disparate organs) does not have to be coordinated so accurately for comfort as do the two eyes. Normal human vision is binocular and unless we have binocular skill we have not normal methods of seeing."

Miss Lancaster ably summarizes growth and development of binocular vision, and the child's mental and emotional development. She reviews the whole process of learning, the learning sequence, the function of the teacher, the application of the learning process to orthoptics. She then con-

siders various orthoptic problems—phorias, accommodative squint, the relation of orthoptics to surgery, anomalous correspondence, suppression, selection of cases for orthoptic treatment. Over one-half the book is devoted to a practical discussion of orthoptic techniques.

Some of the author's comments about testing visual acuity are of particular interest to prevention of blindness workers. "The technician should be alert to the difference between finding out how the patient *sees* and *how he responds to a visual acuity chart.* The two are not identical. . . . Testing visual acuity requires that the patient shall *look attentively* at the test chart or object, shall *want* to see it, and shall report *correctly* what he sees. Failure to secure cooperation on all these points results in misleading and unreliable findings."

Everyone interested in the proper care of children with crossed eyes will find this book of great value.

COMMUNITY HEALTH EDUCATION IN ACTION. Raymond S. Patterson and Beryl J. Roberts. The C. V. Mosby Company, St. Louis. 1951. 346 p. $4.50.

Everyone who has any responsibility whatever for community or agency health education programs will want to read and own this book. So often books of this kind present significant problems in terms of broad principles and generalities. The authors in this case have succeeded throughout in framing the principles in terms of well chosen and clearly stated specifics. And they have actually put into practice what they preach.

The book contains a wealth of information on every phase of a well-rounded community health education program. Panel discussions, forums, pamphlets, exhibits, annual reports, filmstrips and movies, newspaper releases, radio talks, are some of the many media and techniques treated in very realistic and practical terms. Besides, the writing style is captivating.

COMMUNITY PLANNING FOR HUMAN SERVICES. Bradley Buell and Associates. Columbia University Press, New York. 1952. 464 p. $5.50.

A statistical study of services provided by 108 different public health and social welfare agencies in St. Paul, Minnesota, during November, 1948, showed that in a single month:

. . . 7 per cent of the families in the city were dependent on the community for financial support.

. . . 15 per cent of the families had one or more members receiving community services because of ill health.

. . . 38 per cent of the families with health problems also had other problems.

. . . serious problems of dependency, maladjustment and ill health tend to cluster in the same family groups; 5 per cent of the community's families were commanding over 50 per cent of all the city's dependency, health and maladjustment services.

. . . in one month, 40,000 families—40 per cent of the families in the city—needed the services of the 108 health, welfare and recreational agencies.

After discussing the strategic characteristics of these problems, and com-

munity programs for dealing with them, the authors consider the significance of their findings in relation to top-level planning. There is emphasis throughout on the need for a team approach to long-range prevention. The medical and nursing professions are cited for having exacting standards of practice, and the public health system is marked as the only one with a recognizable discipline for the organization of processes for community-wide prevention and protection. Awareness of the need for standards and similar disciplines in the other fields is increasing. The rapid growth of community chests and of local coordinating councils is reviewed.

The need for competent and coherent national leadership is recognized. "Equally real is the danger of local self complacency, of the inherent limitations of local capacity and resources. Our experience is overwhelming that local services without effective national connections, governmental or voluntary, will be found to be the poorest services in the community."

With regard to the contribution of nongovernmental health agencies, the authors point out that leaders feel that these organizations should experiment with services and procedures which eventually can be turned over to, and strengthen, the program of the governmental unit.

Public and personal charity now supports a 13-billion-dollar enterprise to cope with the inter-related, human problems of dependency, ill-health, maladjustment and recreation. All our readers who are concerned with the magnitude and complexity of this enterprise will find this a provocative book.

HEALTH OBSERVATION OF SCHOOL CHILDREN. George M. Wheatley, M.D., M.P.H., and Grace T. Hallock. McGraw-Hill Book Company, New York. 1951. 491 p. $4.75.

Those who are familiar with the filmstrip, *Health Observation of School Children*, developed by the Metropolitan Life Insurance Company, will be intensely interested in this textbook which bears the same title. It was written to provide teachers, other school personnel and interested laymen with more detailed information on specific health problems of children than the filmstrip could present.

There are two distinct subject matter divisions. One presents an overview of the principles of child growth and development and relates these principles very specifically to the health observation of school children. This section is superlative not only in quality of content but also in style of presentation. The second section is essentially a series of chapters on physiologic hygiene, but much more functional and dynamic than such chapters usually are.

Although the book contains much more material than can be covered easily in a basic health course for teachers, it is a valuable reference source for all who have any responsibilities whatever for the health of children of school age.

STUDIES IN NIGHT VISIBILITY. Highway Research Board, Bulletin No. 43. National Research Council, Washington, D. C., 1951. 56 p. $.90.

The Highway Research Board is part of the Division of Engineering and Industrial Research of the National Research Council and is organ-

ized to provide a national clearing house for highway research activities and information. This paper-covered bulletin presents four studies: (1) factors affecting the perception of relative motion and distance between vehicles at night; (2) a study of the relationship between photopic and scotopic visual acuity; (3) field and laboratory evaluation of roadside sign surfacing materials; and (4) filter study of the effect of certain transmission filters on visual acuity with and without glare.

HANDBOOK FOR SCHOOL ADMINISTRATORS. The National Conference for Cooperation in Health Education. Health Publications Institute, Inc., Raleigh, North Carolina, 1952. 72 p. Less than 100 copies, $.50 per copy; $45.00 per 100; $400.00 per 1,000.

This handbook was developed at the request of the American Association of School Administrators and prepared by the National Conference for Cooperation in Health Education. It describes the purpose, program, materials and organization of each of the 62 member agencies of the conference.

Designed primarily for school personnel, it explains the work of health and education agencies, discusses availability of health education source material, and brings to the school administrator resources to help him develop a sound health program for all children in his school.

The extent to which the Conference, through the coordinated activities of its members, is influencing the growth of school and community health programs for children is heartening.

Copies of the handbook should be purchased directly from Health Publications Institute, Inc., 216 North Dawson Street in Raleigh.

A Public Disservice

Continued from page 81

matic, and numerous general ailments such as diabetes, arteriosclerosis, and the like, to name but a few, may be in the incipient stages. Glaucoma simplex and some tumors of the choroid, retina, or the nervous system may be present. Examinations of the eyes by competent eye physicians or optometrists frequently detect these conditions of which the patient is unaware. Early diagnosis and treatment has saved many eyes and many lives.

"A channel such as would be provided by the proposed amendment to the law to bypass a proper eye examination and a competent determination of the degree and kind of refractive error present would be a public disservice of a particularly cruel sort. It is to be hoped that the Legislature will see fit to let such a bill expire in committee."

The bill met with great opposition from many individuals and groups interested in prevention of blindness in New York, and it is good to report that when the State Legislature adjourned this spring neither the Senate nor the Assembly committee had reported favorably on the bill.

1953 NSPB Conference

The next Annual Conference of the National Society for the Prevention of Blindness will be held at the Hotel Statler, New York City, March 18, 19, 20, 1953. Plans for this three-day meeting are now under way. Educational and commercial exhibits will be featured. For further information write to the Society at 1790 Broadway, New York 19.